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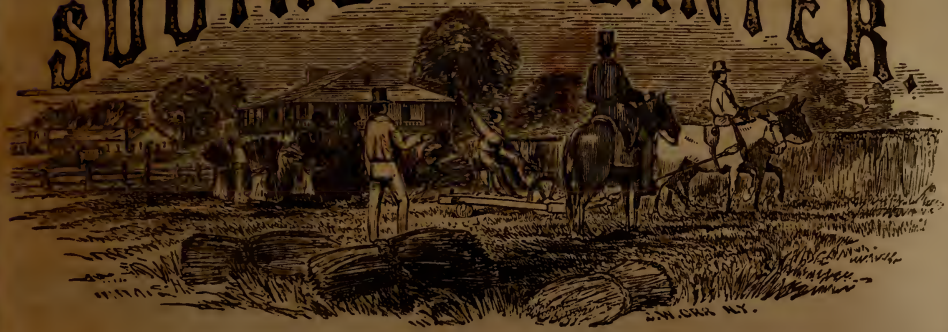
J. E. WILLIAMS, EDITOR.

THE SOUTHERN PLANTER



DEVOTED TO

AGRICULTURE, HORTICULTURE,

AND THE

HOUSEHOLD ARTS.

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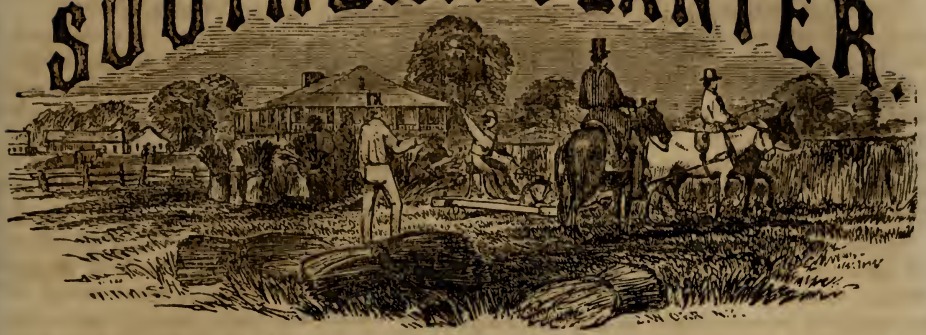

Devoted to Agriculture, Horticulture, and the Household Arts.

Agriculture is the nursing mother of the Arts. [XENOPHON.

Tillage and Pasturage are the two breasts of the State.—SULLY.

J. E. WILLIAMS, EDITOR. AUGUST & WILLIAMS, PROP'RS.

VOL. XIX. RICHMOND, VA., MARCH, 1859. No. 3.

For the Planter.

Tobacco the Bane of Virginia Husbandry.

NO. 2.

In my first number the process of tobacco-making was brought through to the burning, sowing, covering, and enclosing the plant patches for the new crop; while the old crop was in the houses, where it had been fire-cured, struck down, "in case," and packed away in bulk, thickly covered with straw, to keep it in order for stripping—an in-door work always ready to be performed in the bad weather of winter,—and is exultingly claimed by tobacco makers as a signal advantage in its culture, an advantage which will be seen to be more than counterbalanced by other usages incidental to the year's operations; but in any event, the old crop must be gotten out of the way before the new crop is ready to come into the houses. Here we left both crops on hand at the same time, a conjunction of double trouble, incident to no other crop but tobacco, for the reason that it requires a year and a half for its completion, while all other crops require only a year. But here, as already said, we left both crops on hand at the same time—the young plants to be watched, nursed and pushed forward in the plant-patches and the old crop of cured tobacco in the houses to be sorted, stripped, and packed down for prizing or to be sold loose as the case may be.

Formerly, all tobacco was prized into hogsheads, and carried to a public warehouse, there to be inspected by legally appointed officers before it was offered for sale; but now it is often bought up and taken at the tobacco houses as soon as it is stripped, and carried by the purchaser to his neighboring factory whence the manufactured article is sent through the length and breadth of the land.

For the present, the chief supply for foreign markets is manufactured at the great tobacco marts—Richmond and Lynchburg, and a few other towns; but the smaller factories which are springing up in and convenient to the few remaining fresh and unexhausted districts of virgin soil of the State, which alone produces the finest tobaccoes, will intercept the abundant supplies which have of late years erected tobacco buildings in the metropolis of Virginia, rivaling in magnitude and exceeding in numbers the adjacent cotton factories of Manchester, and falling but little behind our unrivalled flour mills in commercial importance. Nevertheless, from the working of the smaller factories and the elements of instability and destructiveness inherent in this product of

Virginia agriculture great changes are inevitable, and at no distant day, as will be more fully shown in the sequel.

But before we return to the new crop in the plant-patches, remembering the dangers of the fly and retarding influence of dry spells, to be watched and prevented by the means already detailed in the preceding number, we must here dismiss the details of managing the crop already in the houses, and take up the operations which demand attention for the new crop.

In the tobacco-making parts of Virginia (for there is far less than a moiety of the State now engaged in cultivating this ruinous crop)—"tobacco land," is as familiar as any household word; meaning rich land—it being well understood that none other than rich land, pays for cultivation in tobacco.*

Thus, the best land, as a matter of course, is selected for tobacco, and whether this is new forest land to be cleared, or old land to be manured (for no old land is ever put in tobacco without manure or some other improvement) the very best is usually selected. The plows are first started in the old land intended for tobacco—this is deeply plowed and left to the ameliorating influences of the winter's frost. The new ground being grubbed and cleared, is thoroughly broken up with the new-ground coulters, raked and the torn-up roots of the forest growth and brush burnt off, is ready for hilling. This hilling process is performed by hand-work, with *hilling hoes*—an implement made for the purpose, differing from the common weeding hoe, and leaves the earth in perfect tilth to receive the young plants when ready to be set out.

While the two crops are thus both on hand, the one being handled as already described in the houses, while the other is being pushed forward for planting, with the supremacy with which tobacco exacts attention above all other matters, it would be regarded as next to insanity to think of any thing else, until the operations above described have been provided for and performed before any thing else. A practical mind will see at a glance how this monopoly of labour and manure must starve all the other departments on a tobacco plantation.

This double pressure of two tobacco crops upon hand the first six months of the year, leaves so little time for the corn crop and oats, as necessarily leads to haste and neglect in providing for them, and whatever "is hastily done, will be badly done." And here especially at this juncture, may be seen how the tobacco starves the others by its pressing demands, to which all other demands give place for all the labour of the plantation to do the important work of hilling—and thus oats sowing and corn planting is hurried out of the way to give place to hilling for tobacco. The hilling of old ground is never done until plowed a second time after the winter plowing—and before this second plowing, the manure is hauled and spread, in order to be thoroughly mixed with the soil by the double operation of plowing and hilling—all which will serve to show there is nothing known in field culture, more elaborately done than the preparation for a crop of tobacco by a regular trained skilful tobacco maker in Virginia. It is no wonder then, that a crop requiring so much labour, and by universal usage having precedence over all other crops on hand, should starve the others; and itself being neither meat, drink, or clothing for man, or provender for stock, should also starve, (or stint at least) both man and beast. To prove the alledged charge against tobacco as the bane of Virginia husbandry, it is only necessary here to show up some of its prominent features, which will be readily recognized by all acquainted with the system. Good husbandry, as applied to agriculture, is such a course of tillage, as affords the largest share of profit and comfort from the products of the soil, and furthermore affords a reasonable prospect of maintaining if not increasing the productive powers of the earth for an indefinite time. To admit a regular diminution in productiveness, leads to ultimate sterility, and impugns the beneficence of Divine Providence in creating the earth with properties destined ultimately to entail starvation upon them.

A proper farming system embraces the largest practical range of the productions of the earth, tobacco-planting being confined to one, is therefore the very antagonism of farming,

NOTE.—In illustration of this truth as well as the more melanchly fact, of the exhausted state of the old tobacco districts, there may sometimes be seen along the margin of a public road for the distance of half a mile or more, a string of tobacco 3 or 4 rows wide, occupying the lately vacated space of a wrom-fence which had protected the narrow slip from the ruin of the tobacco system.

and where it is the chief crop, little else except Indian corn is cultivated.

A few of the results as applicable to Virginia practice are as follow:

Farmers produce their own meat and bread, with some to spare for supplying the nearest market town.

Tobacco planters buy a large portion of their meat from our western drovers, and often not a small part of their bread, from such of their neighbours as are getting wise enough to make a surplus of corn—a plenty of which makes every thing plenty, and a scarcity of which makes every thing scarce, upon a Virginia plantation.

Farmers can afford to spare manure to keep a grass lot or an acre or two of meadow, which give all the rich comforts of a dairy, besides the healthful supplies of the garden and truck patch—what is over going to the corn and wheat crops.

Tobacco planters will hardly spare a bushel of manure from the insatiable tobacco crop, to help to make a square in the garden rich enough for Irish potatoes.

Examples may be cited from that class of our tobacco-makers (from 2 to 10 Hhd. men) of the whole nett proceeds of their tobacco crops being paid for the bread-corn for the year's use of their families. This, doubtless, is an extreme case—but an approximation to it is common. Thus the most laborious crop known to agriculture, the most exhausting of the soil, and requiring the most manure is voluntarily undertaken for a full year and a half to make bread and meat for the producers family one year, while every Tyro in agriculture sees at a glance, that the same amount of labour and manure in one year's application would give more than amply sufficient bread and grain to raise the meat for the year's supply of the plantation, and save the 6 months of surplus labor on the tobacco crop. Verily this looks like infatuation entailed upon our suffering country by this deleterious staple. But to proceed with the farther details of the tobacco crop. Before the hilling process is over, the plant-patches must be uncovered, hand-weeded and topped-dressed—and if necessary, watered from time to time that all may be ready as early as possible for "planting out." And here a few minor troubles may be mentioned. The spring seasons are more unpropitious by reason of droughts than formerly—consequently it is not uncommon to water each plant in the hill, or after a light season, to cover each plant with a clod of the soil, which has to be watered, and taken off in time, lest remaining too long the young plant becomes coddled. This is one of the extra troubles incident to a bad planting season—but another of the same sort may be mentioned here, as the morality of the culture is intended to be adverted to in the sequel. From time immemorial in the history of tobacco, it has been the practice, when a moderate rain falls on a Saturday night, to plant on Sunday morning rather than run the risk of losing the season, at a critical period of the year. As soon as the plants are fairly rooted in the hills, the process of ridging down by the hand-hoes, which scrapes the soil down and leaves the plant clear of grass, is soon followed by ploughing between the rows, throwing the soil back again to be followed before the grass has time to spring by second hilling to the plants. In the meantime, such a preparatory and nursing process has pushed the crop into a rapid growth, and a portion will require priming taking off the bottom dwarf leaves, and topping, leaving the regular number of leaves to each plant (which may be assumed at 8.) This work of topping is performed by particular hands trained for the purpose, and is executed with astonishing adroitness. Tobacco plantation-hands who cannot count 50 will acquire a sort of instinct which enables them to top tobacco with invariable correctness almost as fast as they can walk along the row. After topping, a new trouble begins—at the foot-stalk of each leaf there are three embryo buds, which as soon as the ascending sap to the top is arrested by topping, spring into rapid growth, forming the suckers, which must be taken off, as soon as possible after they grow of size sufficient to be laid hold upon, as these three crops of suckers show themselves in succession, they require constant vigilance to keep them down the greater part of the growing season of the crop, nor is this the only or most formidable trouble of the growing crop. The tobacco-worm, though not always equally destructive is always sufficiently so to require a thorough examination of every plant once in a week or ten days, and here begins a system of vigilant police, to keep down the suckers and destroy the tobacco-worms, which is unparalleled in the history of any other crop, requiring the examination of the whole of every superficial inch of the sur-

face of every leaf in the crop to destroy the eggs and young worms once in every week or ten days, for an egg will hatch and the young worm spoil a leaf in that time.

Soon after topping comes the second plowing, to be followed by the third hilling up. These are the regular operations when seasons are good and run in regular order, but when untoward, as in extraordinary floods or droughts these are provided for by extraordinary operations, such as deep coulterings to long droughts, or an additional plowing when the earth has been settled together by heavy rains and baking weather.

And now follows the cutting operation. The sticks being prepared and the scaffolds ready, it is only the plantation veterans who are sufficient judges of the ripeness of the plants to be trusted with the cutting.

It is a peculiarity of the tobacco, which increases the labour and trouble of saving it more than any other crop, that it does not ripen all at once like grain and grass, but in succession, requiring to be saved through a protracted period sometimes of several weeks. Here again is additional trouble not incident to other crops.

The plants when cut fully ripe, are so brittle that the leaves break off like glass until they are in some degree wilted by the sun, and must therefore be carefully handled; but furthermore, when the weather is hot and the earth dry, must be covered with green bushes to guard against sun-burning which once taking place, the leaf as far as it extends is ruined by it; this sun-burning is another evil in the tobacco-making which requires no little additional labour to guard against, by providing the green bushes and herbage to shade the fresh cut plants, both in the field and on the scaffold.

And now the housing commences, after the plants have hung a few days upon the out-door scaffolds, but here it must be watched also, for here it is liable also to be sun-burnt, and therefore must be protected by bush arbours until thoroughly wilted for convenient handling in the next operation of hoisting and placed upon the tiers in the houses, usually 20 feet square, made of sound logs and carried high enough to afford 4 tiers below joists (inclusive,) to fire under, with close, tight roofs. The out-door scaffolds are made of sapling poles from 20 to 40 feet long, resting upon strong forks let into the ground, so as to support the poles 4 or 5 feet above the surface, and in parallel lines ten feet apart, so that a fence rail eleven feet long will span the interval between the poles, and a foot over to lap upon them—these rails are placed 4 feet apart to suit the length of the rived sticks upon which the tobacco plants are hung, in number from 8 to 12, and these sticks, with their quota of plants placed with their ends resting on the fence rails, at intervals of a foot from each other; this affords data upon which may be calculated the amount of sticks and scaffolding necessary to provide for a crop of any given size.

From these outside scaffolds after being duly wilted, the tobacco is taken, stick by stick, and hoisted to the tiers prepared to receive it inside the houses, when the firing process forthwith commences. This can only be done in the most approved way, with the best fuel, hickory or oak, cut, hauled to the houses the preceding winter, it being found to be best to be half-seasoned. This firing process being critical and dangerous, is intrusted only to the most steady and careful hands, and with all possible diligence, results in the burning of many tobacco-houses yearly.

The fuel is laid in lines of logs across the tobacco-house floor under the tails of the suspended tobacco upon the tiers above, and after closing every crevice of the house, and a tight door, is simultaneously set on fire by a number of hands and very soon heats the house to a very high degree. This, after some hours, dries the tobacco to a crisp state, and in this state is liable by a sudden blast of wind blowing up a spark, or the falling of a stick to set fire to the inflamable mass above, which explodes like a powder magazine. This risk of firing has to be run at least two or three times in every house during the curing season before it is thoroughly prepared to be struck down and put away in bulk for stripping. This brings up the new crop to the stage where we left the old one, which, in the meantime, must be handled, prized, and sent to market to give room for the new crop, when ready to be struck down and bulked for stripping.

We shall conclude this number at this stage of the process of tobacco-making. Nothing doubting, that if the foregoing account does not fully satisfy every partial agriculturist that it is the most laborious

and troublesome of all crops, by the time we have reached the end of our next number, all doubts may be removed.

JOHN H. COCKE.

For the Southern Planter.

Guano Controversy.

January 17th, 1859.

Mr. Editor,—In the January No. of the Planter, your correspondent, "B.," while he expresses his entire approbation of my views in regard to the nutritive and fertilizing properties of guano, takes exception to some of my positions in vegetable physiology. As this is a side issue, and not much practical knowledge is likely to grow out of its discussion, we might very well leave it for the further research and investigation of vegetable physiologists. But, for the sake of a clearer understanding of what I did write, and setting myself right in the premises, I will briefly notice one or two of his objections.

Im primis. "B" objects to my conclusion that plants are not susceptible to the action of *mere* stimulants, because I do not "apprehend" the modus operandi, and says, "if the fact be a fact, that plants are thus acted upon, there certainly is a *mode*, whether I *apprehend* it or not." If the fact, be not a fact, how then, "Mr. B.?" May I not be excused for not "apprehending" how it could be a fact, without the knowledge of the existence of such an organism as we know to exist in the animal creation where we do "apprehend" the "mode?" I contend, that the existence of a nervous system is essential to the development of such an effect, because, all the *positive phenomena* of such action, are found in connection with such a known system. If "B" then, will prove that plants possess such organs, I will admit that they are susceptible to the action of *mere* stimulants; or, if he will prove that they are capable of being thus acted upon, I will admit the existence of such a system pervading their organization. So to conclude with this objection, I neither "apprehend" the *mode* of such action, nor know of the existence of any fact tending to establish a belief that any such effect can be produced.

In the next place: "B." quotes my definition of a stimulant in its broad and extended sense, to be an "agent that exalts and quickens the vital manifestations or forces."

Now, it is very obvious, as he says, that plants have vitality; and that this vitality can be exalted and quickened. If it were not so, it would be useless to attempt to nourish them or cause them to grow by the application of manures and all other agents that tend to their development. But it is one thing to increase the functions of organic life; causing growth, and development, and another thing to stimulate an action that is unattended with nutrition, growth, or development. Both of these efforts can be produced upon animal life, only the former upon vegetable life, and if "B" will look over my article again, he will find that I illustrated this by the effects of nutritious food and the diffusible and transient excitement of brandy, opium, musk, camphor, *et id omne genus;* agents that are powerful when applied to a system of nerves: but innoxious to plants. So a difference must be made in stimulants that exalt the functions of organic life and those that act *merely* upon the nervous system.

Again: "B" objects to my physiology. In maintaining that sensation and locomotion are as cause and effect. I confess that I have no authority for such a position; but, still believe it to be true enough, for all the purposes of my argument. I did not use the term *locomotion* in its literal sense; that is, meaning a change of place; but merely motion. So far as the calls of nature which we call sensation are concerned, you will find motion to be commensurate with them. For whence the necessity of a sensation without the power to respond to it, or whence the necessity of a power, without the sensation to call it into action. But, says the gentleman, that some vegetables are so like animals, and some animals are so like vegetables, that it is impossible to tell where the one kingdom stops and the other begins. And asks me for the "stand point." I know of no stand points in nature. It is thus in all the departments of nature. One species losing its identity by insensible degrees, and another assuming an identity by equally insensible degrees. Do we not observe all the phenomena of a nervous system grow less and less perceptible as the characteristics of animal life diminish? And on the contrary in the highest order of vegetable existance, do we not discern many of the peculiarities of the animal kingdom and two of the most striking of these are sensation and voluntary motion, whenever dis-

eernable; they are evidences of animal life whenever absent; we are on the confines of the vegetable kingdom.

Again: "B." in support of his doctrine that vegetables possess excitability; (independant of that which is common to all things possessing vitality;) calls our attention to the action of the sun upon the sunflower. I hope I am not so stubborn an unbeliever as Bishop Berkly, who could not convince himself of the reality of a carriage in the street, until it had run over him. But with respect to many of the popular opinions of the day, I claim the privilege of withholding my assent. So far as my observation goes, I have seen as many sunflowers with their disks turned from the sun as towards it; and am inclined to the opinion that its relative position is owing more to the way in which the winds have reached it than the sun. But, should it be a fact, and if "B" has any great regard for the ancient faith that is within him, I will not dispute it. Is it necessary to endow this plant with such a piece of exquisite machinery as a nervous system, to keep its face turned both to the rising and the setting sun. If this be the case, it is not remarkable that it, and his other little pet, the sensitive plant, should be singled out from the whole of the vegetable creation, as most worthy of the special admiration of poets and romance writers. Nor can I help suspecting "B." of having something of this feeling, when he descants about the "leafless tree and torpid toad being awakened to life by the stimulating influence of a vernal sun." How like Virgil and Thompson! "B." has certainly felt the influence of the "gift divine," and will not like his little divinities to be stripped of their godlike attributes. But, as I have never yet felt the stirrings of such an influence, I am compelled to seek my causes for such phenomena, in some of the greater forces of nature; though it be laying the ruthless hand of a mere truth searcher upon some of the most beautiful creations of poetry.

All the changes and motions in nature are the result of the operations of a few great forces, and none of these are of more potency than heat; and as the sun is the greatest of all natural sources of heat, why may it not be able to produce these insignificant effects upon the sunflower, and the so called sensitive plant, without this special arrangement of a nervous system. It is the great power of destruction and construction. It upheaves mountains and overthrows them again; causing them to belch forth fire and smoke. It melts down mountains of ice, and causes them to flow like rivers of water; it dissipates rivers of water into thin air, and bears it on the wings of the wind to the uttermost parts of the earth, and yet it cannot bow the stiff neck of the sunflower, or cause a delicate plant to shrink, without the intervention of the machinery of a nervous system.

In conclusion, I thank "B." for the complimentary manner in which he was pleased to speak of my communication, and would like very much to know something more of his "personel" than I can find out from the simple soubriquet of "B." I hope his modesty will not prevent, when he communicates again upon any subject, giving us the benefit of his name. I can see no reason why it should, as he writes both well and sensibly. But should it again prove too much for him, I will be satisfied to receive his autograph to the address of WM. A. BRADFORD.

Millwood, Clark Co., Va.

For the Southern Planter.

Farm-Yard Manure.

MR. EDITOR:

Recent numbers of the Journal of the Royal Agricultural Society of England contains a long and very valuable essay, by Prof. Voelcker of the Royal Agricultural College of England, upon the composition of farm-yard manure in every stage of its decomposition. The essay is encumbered by many analytical details, and other matters not interesting to the general reader, or necessary to the practical man, making it too long for republication in our agricultural journals. As he establishes some important truths in relation to farm-yard manure, I take the liberty of presenting its main features to the readers of the Planter, with the hope that it may prove of practical advantage to some, and of more or less interest to all.

The manure experimented upon, was composed of the mixed droppings of horses, cattle and hogs, mixed with the straw that had been used as litter, and very thoroughly worked over, so as to ensure a manure of uniform composition.

The first analyses were of the fresh manure, when it was only some two weeks old;

the manure in this condition gave the following general results:

	In nat'l state.	*Calc'd dry.*
Water	66.17	
*Soluble organic matter	2.48	7.33
Soluble inorganic matter	1.54	4.55
†Insoluble organic matter	25.76	76.15
Insoluble inorganic matter	4.05	11.97
	100.00	100.00

	In nat. st.	*Dry.*
*Containing nitrogen	.149	.44
Equal to ammonia	.181	.53
†Containing nitrogen	.494	1.46
Equal to ammonia	.599	1.77
Total percentage of nitrogen	.643	1.90
Equal to ammonia	.780	2.30

A delicate reddened litmus paper held over the fresh mixed dung was not affected at first, but after the lapse of a couple of hours it was slightly changed to blue, thus showing that this fresh dung contained but a very small quantity of free, or properly speaking, volatile carbonate of ammonia, for it is in the state of carbonate that ammonia is generally given off from putrifying substances.

On subjecting the fresh manure to analysis for ammonia, the percentage of free ammonia was found to be:

In natural state.	*Calculated dry.*
.034	.10

Ammonia in the state of salts:

In natural state.	*Calculated dry.*
.088	.26

The amount of volatile ammonia, as well as ready formed ammonia, existing in the form of ammoniacal salts in fresh manure, thus appears to be very trifling.

Since there exists no complete, trust-worthy analysis of the ash of fresh farm-yard manure, I thought it advisable to analyse separately the soluble and insoluble portion of the inorganic matters present in fresh farm-yard manure.

One hundred parts of the soluble and insoluble inorganic matters in fresh farm-yard manure were found to have the subjoined composition:

Soluble in Water—27.55 per cent.	
Soluble silica	4.25
Phosphate of lime	5.35
Lime	1.10
Magnesia,	0.20
Potassa	10.26
Soda	0.92
Chloride of sodium	0.54
Sulphuric acid	0.22
Carbonic acid and loss	4.71
Carried forward	27.55
Brought forward	27.55
Insoluble in Water—72.45 per cent.	
Soluble silica	17.34
Insoluble silicious matter (sand)	10.04
Phosphate of lime	
Oxide of iron and alumina with phosphates	8.47
Containing phosph. acid (3.18)	
Equal to bone earth (6.88)	
Lime	20.21
Magnesia	2.56
Potassa	1.78
Soda	0.38
Sulphuric acid	1.27
Carbonic acid and loss	10.40
	100.00

The following table represents the detailed composition of fresh farm-yard manure:

Water		66.17
*Soluble organic matter		2.48
Soluble inorganic matter (ash)		
Soluble silica	.237	
Phosphate of lime	.299	
Lime	.066	
Magnesia	.011	
Potash	.573	
Soda	.051	
Chloride of sodium	.030	
Sulphuric acid	.055	
Carbonic acid and loss	.218	
		1.54
†Insoluble organic matter		25.76
Insoluble inorganic matter (ash)		
Soluble silica	.967	
Insoluble silica	.561	
Oxide of iron, alumina, with phosphates	.596	
Containing phosphoric acid. (.178)		
Equal to bone earth (.386)		
Lime	1.120	
Magnesia	.143	
Potash	.099	
Soda	.019	
Sulphuric acid	.061	
Carbonic acid and loss	.484	
		4.05
		100.00
*Containing nitrogen	.149	
Equal to ammonia	.181	
Containing nitrogen	.494	
†Equal to ammonia	.599	
Whole manure contains ammonia in free state	.034	
Ammonia in the form of salts	.088	

Fresh farm-yard manure being composed of the droppings of horses, cattle and hogs, and the straw used for litter, according to the above determination, in round numbers, consists of two-thirds water, and one-third of dry matter. Since this fresh manure was not more than two weeks old, and no rain had fallen during the time it had lain in the dung pit, all the water is due to the urine and the moisture of the droppings and litter.

The quantity of straw employed as litter must necessarily affect the general composition of fresh dung, and more especially the amount of moisture which it contains; but I believe we are not far wrong by saying that fresh mixed dung, in the production of which litter has been liberally supplied to the animals, when free from rain, consists of one-third dry matters and two-thirds of moisture.

An inspection of the analytical results just mentioned will further bring to view several interesting particulars:

1. *In fresh dung the proportion of soluble organic and mineral matters is small.*—This circumstance fully explains the slow action of fresh dung when compared with the effect which well rotted manure is capable of producing.

2. The proportion of insoluble matters, more especially of insoluble organic matters, in fresh dung, on the contrary is very large. By far the larger proportion of the insoluble organic matters consists of straw changed but little in physical character and chemical composition.

In the simple manure analysed, the amount of insoluble organic matters is ten times as great as that of soluble organic matters, and the proportion of soluble mineral substances nearly three times as large as the amount of soluble mineral matters.

3. Fresh dung contains a mere trace of ammonia in a volatile state of combination, and but a trifling quantity of ammonia in the form of ammoniacal salts.

4. The total amount of nitrogen contained in the *soluble* portion of fresh manure likewise inconsiderable; most of the nitrogen which, as we shall see by and by, is gradually liberated as the fermentation of the dung progresses, is contained in the portion of manure which is insoluble in water. In other words, comparatively speaking, little nitrogen exists in fresh dung in a state in which it can be assimilated by the growing plants. Thus in the sample analysed, the readily available amount of nitrogen in 100 lbs. of fresh dung is only .149 of a lb., whilst about four times as much nitrogen, or, in exact numbers, .494 lb., occurs in the insoluble portion of 100 lbs. of fresh dung.

5. A comparison of the composition of the organic soluble matters with the composition of the organic insoluble matters of fresh dung, however, shows that the former are far more valuable than the latter, inasmuch as the soluble organic matters contain a very large percentage of nitrogen, and in a state of combination in which nitrogen is available to the immediate use of plants.

This will appear from the following numbers:

100 parts of soluble matters in fresh dung, contain 6.04 of nitrogen. 100 parts of insoluble matters in the same dung contain 1.92 of nitrogen. In the same weight of each there is thus more than three times as much nitrogen in the soluble organic matters as in the insoluble.

6. With respect to the inorganic or mineral constituents of fresh dung, it will be seen that it contains all those mineral matters which are found in the ashes of our cultivated plants.

7. Comparing the composition of the soluble inorganic matters with that presented by the insoluble, no essential difference *qualitatively* is perceived between them, for the same constituents which occur in the soluble are found also in the insoluble ash. But there exists a striking difference in the quantitative composition of the soluble and insoluble mineral matters of fresh dung.

8. The principal constituent of the soluble ash of fresh dung, so far as quantity is concerned is *potash;* 100 parts of soluble ash, it will be seen, contain no less than 37.26 parts of real potash, or a quantity which is equivalent to 54.7 of pure carbonate of potash. The analysis of the soluble portion of the ash gave only 14 per cent. of carbonic acid, including the loss in analysis; and as 37.26 of potash take up 17.5 of carbonic acid in becoming carbonate of potash, and moreover much of the soluble lime existed in the solution as bi-carbonate of lime, it is evident that a considerable quantity of potash is united with silica in the soluble ash. The large percentage of soluble silica confirms this view; fresh farm-yard manure thus contains much soluble silicate of potash.

9. The large amount of soluble silica, both in the soluble and insoluble ash, are deserving of notice. In the soluble ash this silica is united principally with potash, and probably also with some soda; in the insoluble ash it is combined chiefly with lime, or exists in a finely divided state, in which it is readily soluble in dilute caustic potash.

10. The most prominent constituent of the soluble ash of fresh dung is silicate of potassa.

11. The most prominent constituent of the insoluble ash is lime.

12. It is particularly worthy of notice that the soluble ash of even *perfectly fresh* dung contains a very *high percentage of phosphate of lime.*

The proportion of phosphate of lime in the soluble portion of ash was in fact found to amount to no less than 19½ per cent of the whole soluble ash, whilst the percentage of phosphate of lime in the insoluble ash was found to be only 9½.

13. *Chemically considered farm-yard manure must be regarded as a perfect and universal manure.* It is a universal manure, because it contains *all* the constituents which our cultivated crops require to bring them to perfection, and is suited to almost every description of agricultural produce.

As far as the inorganic fertilizing substances are concerned, we find in farm-yard manure, potash, soda, lime, magnesia, oxide of iron, silica, phosphoric acid, sulphuric acid, chlorine and carbonic acid—in short, all the minerals, not one excepted, that are found in the ashes of cultivated crops.

Of organic fertilizing matters, we find in farm-yard manure some which are readily soluble in water, and contain a large proportion of nitrogen, and others insoluble in water and containing, comparatively speaking, a small proportion of nitrogen. The former readily yield ammonia, the latter principally give rise to the formation of humic acids and similar organic compounds. These organic acids constitute the most of the brown vegetable substance, or rather mixture of substances, which practically speaking, pass under the name of humus.

Farm-yard manure is a perfect manure, because experience as well as chemical analysis shows that the fertilizing constituents are present in dung in states of combination which appear to be especially favorable to the luxuriant growth of our crops. Since the number of the various chemical compounds in farm-yard manure is exceedingly great, and many no doubt exist in a different state of combination from that in which they are obtained on analysing farm-yard manure, in our present state of knowledge it is impossible artificially to produce a concentrated, universal, and perfect manure, which might entirely supersede home-made dung.

ROTTEN FARM-YARD DUNG.

With a view of ascertaining the changes which farm-yard manure undergoes in keeping, I submitted to analysis a well mixed sample of rotten dung produced under the same circumstances under which the fresh manure was obtained. The rotten probably was at least six months old, possessed a dark brown, almost black, color, and appeared to be well fermented, short dung.

The general composition of this dung is presented in the subjoined table:

	In nat'l state.	*Calt'd dry.*
Water	75.42	
*Soluble organic matter	3.71	15.09
Soluble inorganic matter	1.47	5.98
†Insoluble organic matter	12.82	52.15
Insoluble inorganic matter	6.58	26.78
	100.00	100.00
*Containing nitrogen	.297	1.21
Equal to ammonia	.360	1.47
†Containing nitrogen	.309	1.26
Equal to ammonia	.375	1.53
Total nitrogen	.606	2.47
Equal to ammonia	.735	3.00

I have determined in this manner likewise the proportion of ammonia present in a volatile form, as well as the ammonia in the form of salts, and have obtained the following results:

	In nat'l state.	*Calt'd dry.*
Free ammonia	.046	.189
Ammonia in the form of salts	.057	.232

The proportion of free ammonia in well-rotted dung thus appears not much larger than in fresh dung produced under the same circumstances; and the amount of ammonia present in rotten dung in the form of salts, which are readily decomposed by quicklime, to be almost identical with that contained in the fresh manure.

The detailed analyses of the soluble and insoluble ash of this manure, together with the composition of the whole manure in its natural state we must omit.

A comparison of these analytical results with the numbers obtained in the analysis of fresh manure, exhibits several striking differences.

1. The well-rotted dung contains nearly 10 per cent. more water than the fresh. The larger percentage of water, it is true, may be purely accidental; but, considering the tendency of the liquid excrements to sink to the lower part of the manure pit in which the rotten dung accumulates, I believe rotten dung will always be found more moist than fresh dung upon which no rain has fallen.

2. Notwithstanding the much larger percentage of moisture in the well-rotten dung, it contains in its natural state, with 75½ per cent. of water, almost as much nitrogen as the fresh dung, with only 66 per cent. of moisture. Supposing both to be equally moist, there would thus be considerably more nitrogen in rotten dung than in an equal weight of fresh. This is clearly observed by comparing the total amount of nitrogen in the perfectly dry fresh and rotten dung. In the former it amounts to 1.90 per cent. of nitrogen, in the latter to 2.47. As far as this most invaluable element is concerned, farm-yard manure becomes much richer, weight for weight, in becoming changed from fresh into rotten dung.

3. During the fermentation of the dung the proportion of insoluble organic matters greatly diminishes; thus the dry fresh manure contained 76 per cent. of insoluble organic matters, whilst there were only 52 per cent. in the dry rotten dung.

4. It is especially worthy of observation that, whilst the insoluble organic matter is much reduced in quantity during the fermentation, the insoluble organic matter which remains behind in rotten dung is richer in nitrogen than an equal quantity of insoluble organic matter from fresh dung. Thus 76 per cent. of insoluble organic matter of fresh dung contain 1.46 per cent., whilst 52 per cent. of it from rotten dung very nearly contain the same quantity, viz: 1.26. Or:

100 parts of insoluble organic matter from fresh dung contains of nitrogen,	1.92
100 parts of insoluble organic matter from rotten dung contain of nitrogen,	2.41

5. On the other hand, the relative proportion of insoluble inorganic matters increases much during the fermentation of the dung, since dry fresh dung contains about 12 per cent. of insoluble mineral matters, and dry well-rotten dung 26.8 per cent., or more than double the amount which is found in fresh dung.

6. But perhaps the most striking difference in the composition of fresh and rotten dung is exhibited in the relative proportions of soluble organic matter. Well-rotted dung, it will be observed, contains rather more than twice as much soluble organic matters as the fresh; with this increase the amount of nitrogen present in the soluble state rises from .44 to 1.21 per cent.

7. Not only does the absolute amount of soluble nitrogenized matters increase during the fermentation of dung, but the soluble organic matters relatively get richer in nitrogen also. Thus:

100 parts of dry organic soluble matter from fresh dung contain of nitrogen,	6.14
100 parts of dry organic matter from rotten dung contain of nitrogen,	8.02

8. Lastly, it will be seen that the proportion of soluble minerals matters in rotten dung is more considerable than in fresh.

9. On the whole, weight for weight, well-rotted farm-yard manure is richer in soluble fertilizing constituents than fresh dung, and contains especially more readily available nitrogen, and therefore produces a more immediate and powerful effect on vegetation.

Bearing in mind the differences observable in the composition of fresh and rotten dung, we can in a general manner trace the changes which take place in the fermentation of dung. Farm-yard manure, like most organic matters or mixtures in which the latter enter largely, is subject to the process of spontaneous decomposition, which generally is called fermentation, but more appropriately putrefaction. The nature of this process consists in the gradual alteration of the original organic matters, and in the formation of new chemical compounds. All organic matters, separated from the living organism, are affected by putrefaction, —some more readily, others more slowly. Those organic substances which, like straw, contain but little nitrogen, on exposure to air and moisture at a somewhat elevated temperature decompose spontaneously and slowly, without disengaging any noxious smell. On the other hand, the droppings of animals, and especially their urine, which is rich in nitrogenous compounds, rapidly enter into decomposition, producing disagreeable smelling gases. In a mixture of nitrogenous substances and organic matters free from nitrogen, the former are always first affected by putrefaction; the putrefying nitrogenized matters then act as a ferment on the other organic substances, which by themselves would resist the process of

spontaneous decomposition much longer. Without air, moisture, and a certain amount of heat, organic matters cannot enter into putrefaction. These conditions exist in the droppings of cattle and the litter of the stables, hence putrefaction soon affects fresh dung. Like many chemical processes, putrefaction is accompanied with evolution of heat. Air and water exercise an important influence on the manner in which the decomposition of organic matters proceeds. Both are absolutely requisite in order that putrefaction may take place, while perfectly dry organic substances remain unaltered for an indefinite period. But too large an amount of water, again, retards their spontaneous decomposition, as it excludes the access of air and prevents the elevation of temperature, both of which conditions greatly increase the rapidity with which organic matters are decomposed. Although air is an essential element in the putrefaction of organic matters, yet its unlimited access is unfavourable to this process of spontaneous decomposition, and is productive of new changes. In farm-yard manure the unlimited access of air is prevented by the compact nature of dung-heaps, (consequently only a limited quantity of air can find its way into the interior of the mass.) During the fermentation of fresh dung disagreeable gases are going off. These arise principally from the sulphur and from the phosphorus of the nitrogenized compounds present in dung. A considerable portion of this sulphur and the phosphorus combine with the hydrogen, and form sulphuretted and phosphoretted hydrogen—two extremely nauseous gases, which both escape from fermenting dung heaps. Another portion of the sulphur and the phosphorous unites with atmospheric oxygen, and in the presence of porous substances, becomes changed into sulphuric and phosphoric acid, two non-volatile compounds, which are left behind.

We have seen the relative proportion of inorganic matters in well-rotted dung is much greater than in fresh. This increase in mineral matters can only have been produced at the expense of organic substances, the quantity of which during the process of fermentation must decrease in a corresponding relative degree. Thus the total amount of organic and inorganic matters in fresh dung, dried at 212° Fahr., is:

Organic matters	83.48
Inorganic matters	16.52
	100.00

Whilst in rotten dung there are in 100 parts:

Organic substances	68.24
Mineral substances	31.76
	100.00

It is clear, therefore, that, during the fermentation of dung much of the organic matter must become changed into compounds which are either readily soluble in water, and easily washed out by heavy rains, or into gaseous products, which are readily volatilized. In point of fact, both volatile gases and readily soluble organic compounds are formed. Amongst the former, carbonic acid and ammonia deserve especial mention; amongst the latter, soluble humates and ulmates may be named. These ulmates and humates are dark brown coloured compounds of humic and ulmic acids, with the alkalies, potash, soda, and ammonia. Ulmic and humic acids in a free state are scarcely soluble in water, and for this reason colour it only light brown. These organic acids have a very powerful affinity for ammonia, in consequence of which they lay hold of any free ammonia which is generated in the fermentation of dung, and fix it perfectly, as long as no other compound is present or produced in fermenting dung, which at an *elevated temperature* again destroys the union of ammonia with humic, ulmic, and similarly constituted acids. Now, ammonia is generated during the putrefaction of the nitrogenized constituents of dung in large quantities, and would be dissipated into the air much more rapidly than is the case in reality, if there were not formed in the dung itself a group of organic compounds, which act as most excellent fixers of ammonia. I refer to the humus substances which are gradually produced from the non-nitrogenized constituents of dung. In other words, the straw employed as litter during the putrefaction of dung is to a great extent converted into humic and ulmic acids, which fix to a certain extent the ammonia produced from the more nitrogenous excrementitious matters. The pungent smell of fermenting dung, however, shows that the volatile ammonia cannot be fixed entirely by these means. In the causes of this inquiry, I shall point out the reason of this, and content myself

in this place by saying, that the proportion of ammonia which passes into the atmosphere from fermenting dung-heaps, and the loss which hereby is occasioned is much less considerable than it is generally assumed to be. In fermenting dung-heaps the carbonaceous constituents at first are changed into humus substances, but these are rapidly oxidized by atmospheric oxygen, and partly changed into carbonic acid, a gaseous substance which in conjunction with carbonic oxide and carburetted hydrogen, is given off abundantly from all putrefying organic matters.

I have endeavoured to describe briefly the principal changes which take place in the fermentation of farm-yard manure. It has been shown:—

1. That during the fermentation of dung the proportion of both soluble organic and soluble mineral matters rapidly increases.

2. That peculiar organic acids, not existing—at least, not in considerable quantities—are generated during the ripening of dung from the litter and other non-nitrogenized organic constituents of manure.

3. That these acids (humic, ulmic, &c.) form, with potash, soda, and ammonia, dark-coloured, very soluble compounds. Hence the dark colour of the drainings of dung-heaps.

4. That ammonia is produced from the nitrogenous constituents of dung, and that this ammonia is fixed, for the greater part, by the humus substances produced at the same time.

5. That the proportion of the sulphur and phosphorus of the excrementitious matters of dung is dissipated, in the form of sulphuretted and phosphoretted hydrogen.

6. That volatile ammoniacal compounds, apparently in inconsiderable quantities, escape into the air.

7. That the proportion of organic substances in fresh dung rapidly decreases during the fermentation of dung, whilst the mineral substances increase in a corresponding degree.

8. That this loss of organic substances in accounted for by the formation of carbonic acid, carbonic oxide, and light carburetted hydrogen, or marsh gas.

9. That the proportion of nitrogen is larger in rotten than in fresh dung.

The practical result of these changes is, that fresh manure, in ripening, becomes concentrated, more easily available to plants, and consequently more energetic and beneficial in its action. It may be questioned, with much propriety,—Is this apparently desirable result attained without any appreciable loss? or is it realized at too great an expense? In other words, is the fermentation of dung, or is it not, attended with considerable loss of really valuable fertilizing substances?

In putting this question, we have to bear in mind that the loss in valuable mineral matters, under proper management, practically speaking, can be avoided, since they are non-volatile, and, therefore, must remain incorporated with dung, if care be taken to prevent their being washed away by heavy falls of rain. We have likewise to bear in mind that, in an agricultural point of view, the carbonaceous, non-nitrogenized manure-constituents do not possess a very high intrinsic value; and that we therefore need not trouble ourselves about their diminution, if it can be shown that it is accompanied with other beneficial changes. The only other constituents which can come into consideration are the nitrogenized matters. The question may therefore be thus simplified: Is the fermentation of farm-yard manure necessarily attended with any appreciable loss in nitrogen?

Any one may ascertain that fermenting dung gives off ammonia by holding over a dung-heap, in active fermentation, a moistened reddened litmus-paper. The change of this red colour into blue sufficiently shows that there is an escape of ammonia. However, this experiment does not prove as much as is sometimes believed; for inasmuch as the most minute traces of ammonia produce this change of colour, the escape of this volatile fertilizing matter may be so small that it is practically altogether insignificant. The comparison of fresh with rotten dung, we have seen already, does not decide whether or not fresh farm-yard manure sustains a loss in nitrogen in becoming changed into rotten manure. Apparently there is a gain in nitrogen, for we have seen that rotten dung contains more nitrogen than fresh. This gain in nitrogen, however, is explained by the simultaneous disappearance of a much larger relative quantity of carbonaceous organic matter. Still the accumulation of nitrogen in rotten dung is important, and hardly to be expected; for, since a considerable portion of the

nitrogenized organic matters is changed into ammonia during fermentation, a loss, instead of a gain, in nitrogen naturally might be expected. A much greater loss in nitrogen than is actually experienced would, indeed, take place during fermentation of dung, if this process were not attended with the simultaneous formation within the manure-heap of excellent fixers of ammonia.

FARM-YARD MANURE IN ITS DIFFERENT STAGES OF DECOMPOSITION.

In order to decide the question as to the loss of ammonia during the fermentation of farm-yard manure, a series of analyses in conjunction with direct weighings of dung in various stages of decomposition became necessary. To this end a quantity of the same well-mixed sample of fresh farm-yard manure, the analysis of which is given in the preceding pages, was carefully weighed. The entire crude loss which this experimental heap sustained in the course of time was ascertained by periodical weighing on the weigh-bridge. Simultaneously with these weighings the manure was submitted to analysis, and thus I was enabled not only to determine from time to time the loss in weight which the experimental heap sustained in keeping, but also to ascertain which constituents were affected by this loss, and in what relative proportions.

This manure after exposure from the 1st of November to the middle of February, three months and a half, had the following general composition:

Water	69.83
*Soluble organic matter	3.86
Soluble inorganic matter (ash)	2.97
†Insoluble organic matter	18.44
Insoluble inorganic matter (ash)	4.90
	100.00
*Containing nitrogen	.27
Equal to ammonia	.32
†Containing nitrogen	.47
Equal to ammonia	.57
Whole manure contains ammonia in free state	.019
Whole manure contains ammonia in the form of salts	.064

Estimated Dry.

*Soluble organic matter	12.79
Soluble inorganic matter (ash)	9.84
†Insoluble organic matter	61.12
Insoluble inorganic matter	16.25
	100.00
*Containing nitrogen	.91
Equal to ammonia	1.10
†Containing nitrogen	1.58
Equal to ammonia	1.88

A comparison of these results with the analysis which was made of the fresh manure, will show:

1. That there is more water in the manure than at first.

2. That notwithstanding the larger proportion of water, the soluble organic and mineral matters have become more abundant, whilst the insoluble organic matters have become diminished in quantity.

Thus, on the first analysis, the manure contained 2.48 per cent. of soluble organic matter, and 1.54 mineral substances; and on the second 3.86 per cent. organic and 2.97 mineral substances; whilst the proportion of insoluble organic matters in the first analysis amounts to 25.76 per cent., and in the second to only 18.44 per cent.

These differences are still more striking if we make the comparison with perfectly dry manure. It will then be found that the manure contained:

	1*st analy.*	2*nd analy.*
Soluble organic matters	7.33	12.79
Soluble mineral matters	4.55	9.84
Insoluble organic matter	76.15	61.12
Insoluble mineral matters	11.97	16.25
	100.00	100.00

3. The total percentage of organic substances decreases, whilst that of mineral matters increases. Thus the fresh manure contained:

	1*st analy.*	2*nd analy.*
Organic matters	28.24	22.30
Mineral matters	5.59	7.87

And the perfectly dry manure:

Organic matters	83.48	73.91
Mineral matters	16.52	26.07

4. That the percentage of nitrogen in the second analysis is slightly greater than in the first.

5. That there is about the same inconsiderable amount of free ammonia, and ammonia in the form of readily decomposable salts, in the manure on the second analysis that was found at first.

In the subjoined table is stated the actual weight of the experimental heap at different periods, and the loss which is sustained in these periods:

	Weight of manure in pounds.	Loss in original weight in lbs.	Percentage of loss.
Put up on the 3d of November..	2838	....	....
Weighed on the 30th of April, after a lapse of 6 months.....	2026	812	28.6
Weighed on the 23d of August, after a lapse of 9 months and 20 days.....	1994	844	29.7
Weighed on the 15th of November, after a lapse of 12 months and 12 days.....	1974	864	30.4

We shall see presently in what this enormous loss consisted.

In the table below will be found the composition of the manure at various epochs, and for comparison, calculated dry:

	When put up. Nov. 3.	Feb. 14.	April 30.	August 23.	Nov. 15.
*Soluble organic matters.....	7.33	12.79	12.54	12.04	10.65
Soluble inorganic matters,.....	4.55	9.84	8.39	8.03	7.27
†Insoluble organic matters.....	76.15	61.12	56.49	49.77	42.35
Insoluble mineral matters.....	11.97	16.25	22.58	30.16	39.73
	100.00	100.00	100.00	100.00	100.00
*Containing nitrogen.....	.44	.91	.88	.77	.72
Equal to ammonia.....	.53	1.10	1.06	.93	.88
†Containing nitrogen.....	1.46	1.55	1.75	1.92	1.85
Equal to ammonia.....	1.77	1.88	2.12	2.33	2.24
Total amount of nitrogen,.....	1.90	2.46	2.63	2.69	2.57
Equal to ammonia.....	2.30	2.98	3.18	3.26	3.12
Ammonia in free state.....	.10	.062	.023	.041	.023
Ammonia in the form of salts.....	.26	.212	.249	.154	.159
Total amount of organic matters....	83.48	73.91	69.03	61.81	53.00
Total amount of mineral substances.	16.52	26.09	30.97	38.19	47.00

A comparison of these different analyses point out clearly the changes which fresh farm-yard manure undergoes on keeping in a heap, exposed to the weather.

1. It will be perceived that the proportion of organic matter steadily diminishes from month to month, until the original percentage of organic matter in the dry manure, amounting to 83.48 per cent. became reduced to 53 per cent.

2. On the other hand, the total percentage of mineral matters rises as steadily as that of the organic matter falls.

3. It will be seen that the loss in organic matters affects the percentage of insoluble organic matters more than the percentage of soluble organic substances.

4. With respect to the total percentage of nitrogen in the manure examined at different periods of the year, it will be seen that the February manure contains about one-half per cent. more nitrogen than the manure in a perfectly fresh state.

On the 30th of April the percentage of nitrogen again slightly increased; in August it remained stationary, and had sunk but very little when last examined in November.

This series of analyses thus shows that fresh farm-yard manure rapidly becomes more soluble in water, but this desirable change is realized at the expense of a large proportion of organic matter.—It likewise proves in an unmistakable manner that there is no advantage in keeping farm-yard manure too long; for after three and a half months neither the percentage of soluble organic, nor that of soluble mineral matters has become greater.

Weight for weight, the manure in February was equal to that of April or August, and slightly superior to the same manure in November. The direct weighings, however, of the whole heap have shown us already that a considerable loss in weight is experienced in the different periods during which the manure was kept. As the fresh manure did not improve after February, it is clear that the loss of weight is not due to the mere evaporation of water, or the dissipation of other useless ingredients, but is a real loss in valuable fertilizing constituents.

That this is really the case appears still more decidedly if we consult the direct weighings of the experimental heap, and the composition of the manure at the time at which the weighings were made.

In the following table the composition which the whole experimental heap exhibited at different periods of the year, has been calculated from the data already given.—The actual weight of the manure heap is again stated in the first horizontal column; in the second, the actual amount of water in the whole heap is stated; and in the third, the total amount of dry matter. The next year (bracketed together) show the composition of the dry matters. All numbers in the table express pounds or fractions of pounds.

	When put up. Nov'r 3rd.	April 30.	August 23.	Nov'r 15.
Weight of manure in pounds	2838	2026	1994	1974
Amount of water in the manure	1877.9	1336.1	1505.3	1466.5
Amount of dry matter in the manure	960.1	689.9	488.7	507.5
Consisting of:				
*Soluble organic matter	70 38	86.51	58.83	54.04
Soluble mineral matter	43.71	57.88	39.16	36.89
†Insoluble organic matters	731.07	389.74	243.22	214.92
Insoluble mineral matters	114.94	155.77	147.49	201,65
	960.10	689.9	488.7	507.5
*Containing nitrogen	4.22	6.07	3.76	3.65
Equal to ammonia	5.14	7.37	4.56	4.36
Containing nitrogen	14.01	12.07	9.38	9.38
Equal to ammonia	17.02	14.65	11.40	11-39
Total amount of nitrogen in manure	18.23	18.14	13.14	13.03
Equal to ammonia	22.14	22.02	15.96	15.75
The manure contains ammonia in free state	.96	.15	.20	.11
The manure contains ammonia in the form of salts	2.49	1.71	.75	.80
Total amount of organic matters	801.45	476.25	302.05	268.96
Total amount of mineral matters	158.15	213.65	186.65	238.54

A careful study of the table will convince the reader that the real loss in valuable fertilizing matters which farm-yard manure sustains in keeping is very much greater than that indicated by the direct weighings of the experimental heap. The total amount of dry matter in the fresh experimental heap amounted to 960.10 pounds, but after having been exposed to the influence of the weather for a period of nine months, only 488.7 pounds of dry substance was left behind. The direct weighing of the heap indicates a loss of 29.77 per cent., whereas in reality a loss of very nearly 50 per cent. in the solid constituents of the manure has been incurred. This *enormous waste* in manuring matters, it will appear likewise from a careful perusal of the table, may be prevented, at least to a very great extent, by applying the manure in a fresh state to the land, or, if this inadmissible, by keeping it no longer than is absolutely necessary.

It will be remarked that in the first experimental period the fermentation of the dung, as might have been expected, proceeded most rapidly, but that, notwithstanding, very little nitrogen was dissipated in the form of ammonia, and that on the whole the loss which the manure sustained was inconsiderable when compared with the enormous waste to which it was subject in the subsequent warmer and more rainy seasons of the year. Thus we find at the end of April very nearly the same amount of nitrogen which is contained in the fresh; whereas, at the end of August, 27.9 per cent. of the total amount of nitrogen, or nearly one-third of the nitrogen of the manure, has been wasted in one way or another.

It is worthy of observation that, during a well regulated fermentation of dung, the loss in intrinsically valuable constituents is inconsiderable, and that by such a preparatory process the efficacy of the manure becomes greatly enhanced. For certain purposes fresh dung can never take the place of well-

rotted dung. The farmer will, therefore, always be compelled to submit a portion of home-made dung to fermentation, and will find satisfaction in knowing that this process, when well regulated, is not attended with any serious depreciation in the value of the manure. In the foregoing analyses he will find direct proof that, as long as heavy showers of rain are excluded from manure heaps, or the manure is kept in water-proof pits, the most valuable fertilizing matters are preserved. But let us now see how matters stand when manure heaps, the component parts of which have become much more soluble than they were originally, are exposed to heavy showers of rain.

In the first experimental period little rain fell, and this never in large quantities at a time, whilst in the interval of April and August rain was more abundant, and fell several times in continual heavy showers.—In consequence of this the soluble matters in the heap have been washed out, and with them a considerable portion of available nitrogen, and the more valuable mineral constituents of dung have been wasted.

The above analytical data, if I am not mistaken, afford likewise a proof that even in active fermentation of dung little nitrogen escapes in the form of volatile ammonia, but that this most valuable of all fertilizing materials, along with others of much agricultural importance, is washed out in considerable quantities by the rain which falls on the heaps, and is wasted chiefly in the draining of the dung heaps.

A single fact, it has been truly said, is worth more than a dozen vague speculations. We hear frequently people talk of the loss in ammonia which farm-yard manure undergoes in keeping, and this loss is referred by them to the volatilization of the ammonia which is produced in the putrefaction of the nitrogenized constituents of dung. I have, however, already mentioned that simultaneously with the ammonia, ulmic, humic, and other organic acids are generated from the non-nitrogenized constituents of manure, and that these acids possess the power of fixing the ammonia in an excellent manner. If this were not the case it would be difficult, if not impossible, to explain the circumstance that the proportion of soluble nitrogenized matter increased considerably in the manure on keeping for a period of six months, and that during this period the total amount of nitrogen scarcely suffered any diminution. In April the amount of nitrogen in the soluble matters of the entire heap is 6.07 pounds, and by the 23d of August it is reduced to 3.76 pounds. Why, it may be asked, is it not likely that most of this nitrogen has passed into the air in the form of volatile ammoniacal compounds? In reply to this question I would answer that a loss taking place in this way would be felt much more sensibly in the period of active fermentation, in which, however, we have seen that scarcely any nitrogen is dissipated. In the August and November analyses, moreover, it will be observed that not only the amount of soluble organic matter, and with it that of the nitrogen, decreases, but that the soluble mineral matters, which in April amount to 57.88 pounds in the entire heap, became reduced to 39.16 pounds by the 23d of August. Now, this decrease in soluble mineral substances can only be ascribed to the rain which fell in this period, and it is plain that the deteriorating influence of heavy showers of rain must equally affect the soluble nitrogenized constituents of dung.

In conclusion, it may not be amiss to state briefly the more prominent and practically interesting points which have been developed in the course of this investigation.

1. Perfectly fresh farm-yard manure contains but a small proportion of free ammonia.

2. The nitrogen in fresh dung exists principally in the state of insoluble nitrogenized matters.

3. The soluble organic and mineral constituents of dung are much more valuable fertilizers than the insoluble. Particular care, therefore, should be bestowed upon the preservation of the liquid excrements of animals, and for the same reason the manure should be kept in water-proof pits.

4. Farm-yard manure, even in quite a fresh state, contains phosphate of lime, which is much more soluble than has hitherto been suspected.

5. The urine of the horse, cow and hog, does not contain any appreciable quantity of phosphate of lime, whilst the drainings of dung heaps contain considerable quantities of this valuable fertilizer. The drainings of dung heaps, partly for this reason, are more valuable than the urine of our domestic animals, and therefore ought to be prevented by all available means from running to waste.

6. The most effectual means of prevent-

ing loss in fertilizing matters, is to cast the manure directly on the field whenever circumstances allow this to be done.

7. On all soils with a moderate proportion of clay no fear need be entertained of valuable fertilizing substances becoming wasted if the manure cannot be plowed in at once. Fresh and even well-rotted dung contains very little free ammonia; and since active fermentation, and with it the further evolution of free ammonia, is stopped by spreading out the manure on the field, valuable volatile manuring matters cannot escape into the air by adopting this plan.

As soils with a moderate proportion of clay possess in a remarkable degree the power of absorbing and retaining manuring matters, none of the saline and soluble organic constituents are wasted even by a heavy fall of rain.

I am much inclined to recommend as a general rule: cart the manure on the field, spread it at once, and wait a favorable opportunity to plow it in. In the case of clay soils, I have no hesitation in saying that the manure may be spread even six months before it is plowed in, without losing any appreciable quantity of manuring matters.

8. Well rotted dung contains likewise little free ammonia, but a very much larger proportion of soluble organic and saline mineral matters than fresh manure.

9. Rotten dung is richer in nitrogen than fresh.

10. Weight for weight, rotten dung is more valuable than fresh.

11. In the fermentation of dung a very considerable proportion of the organic matters in fresh manure, is dissipated into the air in the form of carbonic acid and other gases.

12. Properly regulated, however, the fermentation of dung is not attended with any great loss of nitrogen, nor of saline mineral matters.

13. During the fermentation of dung, ulmic, humic, and other organic acids are formed, as well as gypsum, which fix the ammonia generated in the decomposition of the nitrogenized constituents of dung.

14. During the fermentation of dung the phosphate of lime which it contains is rendered more soluble than in fresh manure.

15. In the interior and heated portions of manure heaps ammonia is given off; but, on passing into the external and cold layers of dung-heaps the free ammonia is retained in the heap.

16. Ammonia is not given off from the surface of well compressed dung-heaps, but on turning manure heaps, it is wasted in appreciable quantities. Dung-heaps for this reason should not be turned more frequently than absolutely necessary.

17. No advantage appears to result from carrying on the fermentation of dung too far, but every disadvantage.

18. Farm-yard manure becomes deteriorated in value, when kept in heaps exposed to the weather; the more the longer it is kept.

19. The loss in manuring matters, which is incurred in keeping manure-heaps exposed to the weather, is not so much due to the volatilization of ammonia, as to the removal of ammoniacal salts, soluble nitrogenized organic matters, and valuable mineral matters, by the rain which falls in the period during which the manure is kept.

20. If rain is excluded from dung-heaps, or little rain falls at a time, the loss in ammonia is trifling, and no saline matters, of course, are removed; but, if much rain falls, especially if it descends in heavy showers upon the dung-heap, a serious loss in ammonia, soluble organic matters, phosphate of lime, and salts of potash is incurred, and the manure becomes rapidly deteriorated in value, whilst at the same time it is diminished in weight.

21. Well rotted dung is more readily affected by the deteriorating influence of rain than fresh manure.

WILLIAM GILHAM.

V. M. I., February 6th, 1859.

For the Southern Planter.

A Hint to Farmers.

Mr. Editor—I hope your expectations have been realized in relation to the success and spread of the Planter. It is at all times to me an acceptable and interesting paper, but whenever I get through with a number, I can but regret that out of the number of intelligent and really practical farmers we have in the good old State, that so few will take pen in hand and commit to paper their experience in growing various crops—their success in the use of fertilizers—such as guano, phosphates, salt, plaster, lime. Those who have used, or wish to use, lime on the clay lands of the Valley would, I know, from my own wishes, be delighted to hear from those that are ahead of them. How much

satisfaction would be given if every farmer in Virginia, who has subsoiled his lands would state how many years he had used a subsoil plow, and whose patent he used—how deep he averaged with a surface and subsoil plow, and also whether or not he had found *wheat* and *clover* to withstand the frost of winter better where the land had been subsoiled a year or two previous.

I think it would be well for the State Society to offer a $50 or $100 premium for the greatest number of acres plowed and subsoiled to an average depth of 15 or 18 inches in one season for a corn crop. Also $25 if it can be satisfactorily shown that 10 or 20 barrels more corn can be raised on 10 acres of land plowed and subsoiled, plowed 15 or 18 inches deep—than similarly cultivated without being subsoiled. Such offers would stimulate farmers, cause them to reflect, to read, and to experiment for their own satisfaction for a succession of seasons.

A word about Reaping Machines and Family Sewing Machines. There are nearly 100 different kinds of reaping and mowing machines offered for sale in the United States, and half that number of family sewing machines, and each one proves by legal authority that it is better than all the rest.

In 1843 I purchased a McCormick Reaper at $100. Since then I have become familiar with many different patents, and with the experience I have had, I prefer W. A. Woods' make of Manny's Reaper and Mower, because I have found it simple and durable, and better adapted to the wants of the farmer than any of the others. I have frequently within the past three years examined the different sewing machines in the Patent Office—also those in use in Washington. I have also consulted some of the knowing ones in the patent agency business: the result was, I became satisfied that Wheeler & Wilson, No. 343 Broadway, New York, made the most reliable family sewing machine, because its work will not rip, has fewer changes than any other, and operates with little or no friction, consequently has proven more durable than others that give satisfaction in most respects. I purchased one, and am perfectly satisfied. If every farmer who purchases such things would communicate his success through the Planter, how much vexation and money would be saved to the State.

Yours, very respectfully,

ISAAC IRVINE HITE.

February 8th, 1859.

For the Southern Planter.

Tobacco—the Life and Soul of Virginia Husbandry—*as is demonstrated by the present rapid improvement of the lands in the Tobacco-growing regions of the State, and the prosperous condition of the planters themselves.*

I was surprised to see, in a late No. of the "*Southern Planter*," an attack upon this venerable weed, in honor of which I presume, Mr. Editor, the name of your paper was given. It is true, we often see in Northern Agricultural journals, and occasionally in essays of those across the waters, the gullied hill-sides, and the barren fields of our once fertile State, paraded as the legitimate results of the Tobacco culture; but we as often see the same allusions made to prove the baneful influence of slave labor. I suppose that these barren fields were once rich—but when? I am now muster-free, but my earliest recollections reach not back to that period. Even now, in many sections of our State, we are still mowing the original forest, and but little of it, comparatively, can be called really fertile; I mean, of the lands in the proper Tobacco region. But, sir, if we wish to raise an exuberant crop of anything, wheat, corn, oats, or grass; nay, if we wish to prepare a piece of land for an orchard or a garden, what is the best of preparatory courses? I will venture to affirm, that no man who ever tried it will deny that the *proper* culture of Tobacco on the land is that course. Remember that the *proper culture* implies, and therefore necessarily embraces, *proper manuring*. It stands the high-pressure system of manuring better than any other crop, and upon that system pays better. Bad husbandry in general, indeed a total want of husbandry, has been the bane of *Old* Virginia, and there is vast room for improvement in that respect still. But wherever the spirit of improvement is infusing itself now, the value of the Tobacco crop, as an aid to this great and good work, is beginning to be duly appreciated. A barren old field (if of at all favorable texture of soil) may be taken up and prepared for Tobacco by spreading a coat of leaves and plowing them in, in the Fall, and by an addition of 300lbs. of guano to the acre, and 150 of plaster in the Spring, and a further dressing of 100lbs. of guano and 50 of plaster in the course of cultivation. Here is an average cost of $16 00 to the

acre in foreign manures. Two acres and a half to the hand, or 10,000 hills, is a moderate crop when the wheat does not exceed five acres to the hand. So the cost of manures would be $40 00 for Tobacco, to each hand, if we rely on guano. Now for the product. With such manuring and ordinary seasons, we may fairly calculate on each five plants yielding a pound nett, or 2,000lbs. of Tobacco from the 10,000 hills. This, at the present rates for such a crop, would yield $240 00, a sum that would pay for the hire of the hand $150 00, his board and clothing $50 00, and the improvement of 2½ acres of barren land $40 00. You ask, is this all that Tobacco culture can do? Just to clear expenses? I reply by asking: Where is the corn, and the wheat, and the oats, and the numerous other things cultivated by the farm hand—all together occupying more than twice the amount of time employed in raising and fitting for market these 2,000lbs. of Tobacco? Deducting from the whole of this only the cost of cooperage, transportation and sales, and also the feeding of a horse and rent of the land, all the balance is nett proceeds of the slave's labor.

I will ask your attention to the other crops. We will suppose that the wheat, oat, and corn land on the farm is no better than that taken up for Tobacco—a gloomy prospect for a man that seeks to make his bread, more especially if he delights in a sleek horse or a fat hog, or milk and butter. One hand in such land, with 2½ acres of Tobacco, may cultivate 5 of corn, 5 of wheat, and 5 of oats. One horse, 2 head of cattle, 4 of sheep, and 4 of swine, would be ample stock to the hand—much more than enough if the owner and family, white and black, are not living on the land. Without consuming more labor than it is worth, this head of stock could barely give 5 acres of land a light dressing of manure. Let that be applied to the corn, and it might secure 4 barrels to the acre, or $80 00 worth of corn. Now we will allow for the wheat the same expenditure that was given per acre for the Tobacco, and I presume it will be admitted that the average of 20 bushels yield to the acre is a liberal allowance—which pays only 100 bushels on the 5 acres, or $140 00 gross. If I mistake not, the cost of transportation of an equal value of wheat is about double that of Tobacco—not to mention the extra hires in the harvest-field and the cost of machining. It is hardly necessary to make any estimate of the oat crop, for it is confessedly less remunerating than any crop we cultivate. I neglected to deduct the cost of manures purchased for the wheat, $16 00 per acre, or $80 00 on the 5 acres, which at one dash takes off more than half the gross yield, and leaves us only $60 00 from 5 acres in wheat, against $200 00 from 2½ acres in Tobacco. I allow 20 bushels to the acre of wheat on the same land on which I allow only 800lbs. of Tobacco to the acre. I allow $1 40 a bushel for the wheat, and $12 00 a hundred weight for Tobacco.

Now, in what condition do the two crops leave the land? After wheat, it is generally conceded that no cultivated crop succeeds well; but clover and other grasses may follow, and doubtless, in this case, would with great luxuriance, and we might regard the land as improved. How stands the case with the Tobacco land? It is ready for anything. Without a particle of manure, it will yield 15 bushels of wheat to the acre, followed by a luxuriant crop of clover. Or if the process of the previous year be repeated, it will yield 2,500lbs. instead of 2,000lbs. of Tobacco. It will yield from 20 to 25 or 30 bushels of corn to the acre. In a word, it is left in the finest heart and tilth, to be used in any way that suits the planter.

One word as to the rationale of all this. Tobacco is the broadest of broad-leaved pod plants, and therefore feeds more from the atmosphere than any plant we cultivate. It draws from the soil less of the phosphates even when it is allowed to seed. See Liebig's Analysis. We take from the land nothing but the leaf; the stalk and the root are both kept on the land, and not more than one plant in five thousand is ever allowed to go to seed. It is an exhauster of potash, but of nothing else. Long hence may the time be when Old Virginia shall cease to grow Tobacco. If the views presented be correct, and I think they are, how else can we afford to improve our exhausted lands but by the culture of Tobacco, which not only leaves the land in the best condition of any cultivated, but at the same time yields incomparatively the largest revenue for purchasing the manures necessary for extending our improvement. Some speaks of the valuable timber wasted in burning plant patches and firing the Tobacco. Why, sir, Spring before last, which

was a most difficult season, I raised an excellent patch on *pine old field*, burnt with *old field pine;* and this present year I have fired exclusively with coal made of old field pine, except one day's drying in one barn. The time occupied in managing the crop is spoken of. Very good, the results show that all of it is time very well and profitably occupied.

NICOT.

For the Southern Planter.

When is the Proper Time for Preparing Tobacco Land?

Mr. Editor—Having but little knowledge of the cultivation of the Tobacco crop, some experienced farmer will do me a favor by informing me, through the columns of the Planter, what is the most proper time for preparing land that is in clover for Tobacco, in order the more effectually to guard against the cut-worm. An opinion is prevalent among some old Tobacco makers in this vicinity, that it amounts almost to an impossibility to make a full crop upon land that has been well set in clover. Some have advised me to plow my land in August, some in October, and so on. They say that the cut-worm is killed by exposure to a winter's frosts. It seems to me, however, that by plowing up young clover late in the Spring, it would furnish food for the worm, and that it would let the Tobacco alone. Yours, &c.,

C.

For the Southern Planter.

Information Wanted, on the Cultivation of Apple Trees.

FEBRUARY 3rd., 1858.

Mr. Editor—As I am a regular subscriber to "The Southern Planter," (though not entitled to the premium you offered in your last to delinquent subscribers,) I make it a rule always to look over its pages when it comes, and am gratified when any subject is treated of in a way within the range of my comprehension.

Being particularly interested at this time in an apple orchard, I turned, with much hope, to the piece, "Profitable Treatment of an Apple Orchard," from Mr. A. A. Campbell; but I find it does not meet my necessities at all. In the multitude of the other products discussed, the apple trees are lost sight of! Will Mr. Campbell be so kind as to say what was the yield of apples, as well as of corn, peas, turnips, and wheat? And how he protected his trees from the depredations of his cattle, when he used his orchard as "grazing ground"? This last information I desire more for the benefit of some of my friends, who do not believe in fences as I do, and whose fruit trees suffer from cattle. I have lately been at the expense and trouble of putting a good enclosure around my orchard, which I have entire confidence in. I have been advised never to put corn or any grain crop in an orchard; but to cultivate exclusively in it peas, sweet potatoes, and such other things as come under the term "trucks"

BY US HANOVERIANS.

For the Southern Planter.

The Cultivation of Pears Recommended.

KING AND QUEEN C. H.,
Jan. 17th, 1859.

Dear Sir—You will receive herewith a few Winter Nelis pears. They are not as good as usual, being a little astringent—owing, perhaps, to being gathered rather early. Let me advise you to plant some pear trees, if you have not done it already. The Seckle, Bartlett, White Doyenne, or Virgalieu, and Sheldon, for Summer; and Winter Nelis and Lawrence, for Winter, have succeeded very well with me. About eight years ago I purchased some pear trees on Quince and some Standard. Those on Quince have borne but few pears. The Standards have borne very full for the last three years. Yours truly,

R. P. JR.

We return our thanks to our friend P. for the delicious pears, which reached us safely.

We give his letter an insertion in the Planter, that it may reach the eye of those who are about setting out orchards. We hope they will all follow the good example he has set, and send us a box of fruit as good as his. Such presents are always acceptable and welcome.

Cuban Tobacco Seed.

We are indebted to our friend, D. H. London, Esq., for a paper of the above seed, which we have distributed agreeably to his suggestion.

We beg his acceptance of our thanks for the seed, and his forgiveness for the liberty we have taken in publishing his interesting letter, which was not written for that purpose.—[Editor.

Havana, Jan'y 4th, 1858.

My Dear Sir—I put under cover some tobacco seed, from the very best quality of the Vuelta de Abajo, the district in which the finest kinds are raised—a range of mountains, on the Southern exposure of which this district lies, runs Westward from Havana to the termination of the Island, and faces the Caribean sea from these mountains, called the Sierra de los Organos. There are, going into the sea, many small rivers, and from this diversified soil is grown the various qualities of the tobacco used in making cigars. The receipt, made out in both Spanish and English, for raising the plant, varies but little from our own method, except in priming, which the Cubans dispense with. My impressions are, that it may be raised in Virginia and North Carolina to advantage by a little care. I am certain that Mr. Carter, who owns and works the place formerly worked by Mr. Curtis Carter, could raise the plant to perfection, judging from some I saw at his place year before last. A very few seed will be enough for several to try them; and I put under cover enough for you to hand to several in the county of Henrico. No time should be lost, as this is the season for burning the beds, or soon will be.

With my regards and good wishes,
I am, your friend and ob't serv't,
Dl. H. London.

Mode of Sowing Tobacco Seed.—It is sown in a plant-bed consisting of vegetable soil---or such soil as you find in newly cleared land,---which soil is passed through a sieve in order to bring it to a proper degree of fineness. (In other words, the soil is to be thoroughly pulverized.) The transplanting is done, placing the plants half a vara (17 to 18 inches, English,) apart. Afterwards, when they have reached the height of half a vara, (about 17 inches, English,) you pinch off the top of the central spire, and this operation is repeated every 15 days, in order that the strength of the plant may be expended upon the leaves below---(literally, in order that the leaves may become well tufted.)

For the Southern Planter.

Applying Guano to Corn and Tobacco.

Near Mount Airy, N. C.,
Jan. 24th, 1859.

Mr. Editor—Will you, or some of your correspondents, through the columns of the "Planter," favor me with some information in regard to the cheapest and most effectual way of applying guano to corn and tobacco? I say "cheapest and most effectual," because here we have to pay from $90 to to $100 per ton, and experience has demonstrated that at that price it will not prove remunerative sown broad-cast. Would *rolling* corn in guano give it an earlier start and preserve it from the ravages of vermin?

I am, respectfully yours,
James C. Norman.

Remarks.—We have been assured by two gentlemen, who tried the experiment of rolling corn in guano *before planting*, that as soon as the grain began to germinate, the sprout was killed, and the field had to be replanted. We *have seen* tobacco made by applying a small quantity of guano in the hill; but we have never used guano on tobacco. We shall be glad to hear from any of our subscribers in response to the queries of Mr. N.

We have, in our own immediate neighborhood, so inexhaustible a supply of chinch bugs, that we are afraid to apply guano to corn—having already suffered severely from their ravages. We made very little corn, and had to pay for guano applied to it, in the Summer of 1856. We believe that guano is much improved, as a fertilizer for corn, by mixing an equal bulk of plaster with it. The only way we have ever used it, was to sow at the time of "throwing dirt" to it, along the sides of the stalks, and then lapping the furrows over it.—[Editor.

For the Southern Planter.

Culture of Sweet Potatoes.

Henrico, Feb'y 15th, 1859.

Ed. Southern Planter:

Dear Sir—I have delayed much longer than I intended, to fulfil the promise made some weeks ago.

I know a farmer who was successful in raising fine sweet potatoes, on the same piece of ground till his death, by liberally manuring and *deep* plowing; and remember well having seen some potatoes raised by him, a year or two before his death, which were the largest I ever saw.

Light sandy, loamy lands, rich, or well filled with vegetable matter, are best adapted to the growth of this favorite esculent. Deep plowing, and perfect pulverization, are essential to success.

Cover the ground with leaves or tags; scatter lime broad-cast, (30 bushels to the acre,) and turn them in. This must be done in February or March. A week before setting out plants the ground should be dragged, repeatedly, till it is pulverized; lay off rows three feet apart, the distance giving ample room to work the potatoes; strew mould in the trenches, which should be deep enough for depositing that fertilizer; cover the mould with earth,—the hills should be from 1 to 1½ feet high. I have no doubt that Mr. G. G. M. will bring his lands to the potato-bearing state again by adopting the method above mentioned.

As to preserving sweet potatoes: Col. Davis' mode is an excellent one, though not cheap. Mine is cheap and simple. It is fixed as follows: Make a pit in the ground, 3 feet below the surface, 12 feet long and 7 wide: place refuse planks on the bottom and walls; then build a structure over the pit, something like an ice house; cover it with straw and earth, expressly to prevent the admission of cold air. A fire should be made in the pit, previous to placing the planks on the bottom, till everything therein is thoroughly dry. Now spread dry tags on the floor; pour in potatoes, which should be dried in the sun a day or two before, and cover them with *dry* tags. An opening may be made in the Southern side, large enough to afford access to the potatoes. *Never open this except in good weather.* Such is our mode of wintering roots.

Respectfully,

X. Y. Z.

Osage Orange.

We have received from our friend, Yardley Taylor, several articles on the Osage Orange, published in the Washingtonian. He will please accept our thanks for them, along with the assurance that, we are *always* glad to hear from him.

We have lately had some inquiries made about the Osage Orange. We would call attention to the advertisement of Gen. Richardson (in our advertising sheet). He is the only gentleman in our vicinity who has had them for years. (so far as we know) and is competent from experience with the plant, to furnish thorough and reliable information as to their culture, &c.

Osage Orange Hedging.---No. 1

WILLIAM B. LYNCH:

With thy permission I propose occupying a space in the columns of the Washingtonian, in reviewing a book on hedging by Dr. John A. Warder, of Cincinnati, and published by A. O. Moore, Agricultural book publisher, 140 Fulton Street, New York. The book contains 291 pages, with 219 pages of it devoted to hedging, and the remainder of it to evergreens, their propagation, transplanting and culture in the United States. The work is eminently practical, Dr. Warder having been engaged in hedging his farm at North Bend, Ohio, for a number of years, without having anything to do in the sale of plants. He has called to his aid the practice and experience of other persons largely engaged in the use of hedges, and thus presented a large amount of practical experience in making a good and durable enclosure for farm purposes.

The different varieties of plants used for hedging, are treated of, and their adaptability to our soil and climate considered, and the conclusion is generally admitted, that the Osage Orange is *the hedge plant* for this country. It being a native and hardy growth South of Lake Erie, with its strong and sharp thorns, and leaves that no stock will eat, its tendency to branch abundantly when cut down, gives it advantages that no other known plant so eminently possesses. The botanical name of the plant is Maclura aurentiaca, called Bois d'Acre French, now Bodark, and Bow Wood by the Indians. It takes its name of Osage Orange from the form of its fruit, being the size of a large Orange, but rough on the surface, and filled with a tough, bitter, stringy mass filled with seeds, radiating from the center, and larger than apple seeds. The business of hedging in the west, is now so systematically conducted, that persons go to Arkansas and Texas and collect thousands of bushels of seeds annually for use and sale. The lessening of the timber lands of Ohio, and the very extensive prairie farther west calls for a large amount for hedge purposes, and since it has been proven practically that it may be made to answer a good purpose, it seems likely that the demand will continue for a long time to come.

The failure of hedges is treated of at length, and the reasons given, the laws of vegetable physiology are stated, and a system based upon those laws is advocated and shown by experience to be correct. This system *must be* adhered to, if we wish to be successful, and as success has always attended where these principles have been adhered to, they are insisted upon with confidence.

The whole operation, from the procurement of the seed, to the full grown hedge is treated of and explained, so that any person with ordinary judgment may succeed by following the directions given. The best way for us, in this section to procure seed, is to send to some reliable dealer in the article and obtain them. We have been in the practice of sending to Cincinnati, to J. F. Dair & Co., 40 and 42 Market Street, agricultural seed dealers, and have obtained good seed; cost, there, about $4 per peck, and then $1 per express to Harper's Ferry. One peck last spring, produced us this fall, upwards of 16,000 plants. Persons designing to go largely into planting, might prefer to raise their own; but generally, for small quantities, would be better to give $3 per thousand than to plant themselves. After the seed is procured, it must be prepared for sprouting, as it has a hard shell on, by pouring boiling water upon it, which should be drained off, and the seed is then to be kept covered snugly, until it is ready to sprout, this will require about a week, more or less, according to the temperature. If the seed is in a large mass, it should be frequently stirred to prevent fermentation. In the mean time prepare the ground by deep ploughing and harrowing; the soil should be good, and if somewhat sandy so much the better, it will not bake so hard as clay soil, which is of importance with plants of so large seed leaves as this. When the ground is made mellow about the 1st to 15th of 5th month, (May,) according to the season and the sprouting of the seed, proceed to plant, remember the ground must be warm to ensure good success. Stretch a line across the plots and make shallow furrows as if to plant peas or beans, then drop the seed in these rows about an inch apart, and cover with the earth drawn over them in a ridge, cover them two or three inches deep, according to the weather, shallower if threatened with rain, but deep if dry weather is probable. The rows are recommended to be eighteen or twenty-four inches apart, so as to use the horse tillage during summer; but we use a seed drill, and hand garden plow, which we prefer. By having a ridge over the seed, and going along with a small rake and drawing the top of it down, just before the plants make their appearance above ground, we destroy the first crop of weeds in removing the crust and greatly facilitate their appearance particularly if the soil is of a clayey texture. Summer cultivation will consist in keeping the ground stirred and free from weeds; for this purpose drill planting is much preferable. The plants, if too thick, may be thinned out, and good cultivation is very desirable, as yearling plants are much preferable for planting. The plants may stand in the ground until spring without injury; but it is recommended to take them up after frost, and bury them in a dry cellar after cutting their tops off, or they may be buried in the ground like potatoes. The advantage of this is, there may be rainy weather when we want to plant in the spring and prevent us doing so at the proper time, while the plants in the ground will start to grow and may be injured by so doing, while if we have plants cut we can prevent this without any injury to the plant. Other recommendations are made not necessary to recapitulate here, as I presume any persons wishing to go into the hedging business would procure the book at once, which may be done by enclosing one dollar to the publisher and the book will be returned postage paid by mail.

To plant the hedge, first prepare the ground thoroughly by deep ploughing and subsoiling, and have the bed at least six feet wide. This should be done sometime before planting, and at the proper time for planting, have the surface well pulverized, and all clods, stones, &c., thrown off the middle, where the planting is to be done. Stretch a line where the plants are to be set, and be sure to have them straight. Some prefer planting with a dibble, others with a trowel; but Dr. Warder prefers the spade, thus by inserting the spade down by the line, a foot deep, at an angle of forty-five degrees and slightly raising it, the plant may be thrust down under it, and held till the spade is withdrawn, and then tread down with the foot. The plants should be set about two inches deeper

than they stood in the seed-bed. Spring planting is on the whole preferred. The distance of the plants apart in the row is important, and in this there is a difference of opinion among hedge-growers. Some recommending planting in two rows 6 inches apart, with one foot apart in the row so as to equal 6 inches apart in the two rows; others seven and one-fifth inches apart in one row, or five to a yard; others eight to ten inches apart in one row. After giving those opinions of writers, some of whom rank very high as experienced hedgers, Dr. Warder goes on to say, "Yet I cannot coincide with them, while my observation of facts and my reasoning or deductions therefrom teach me to anticipate serious evils from crowding, as intimated on a previous page." He recommends twelve, eighteen or twenty-four inches as near enough in the row, and thinks that with proper cutting down and encouraging lateral branches, it will make a more healthy and better hedge, than if crowded so close. Five inches apart will take thirty-three to a rod, seven inches twenty-eight, eight inches twenty-four and a half, ten inches will take twenty plants, while one foot would take sixteen and a half, one and a half apart would take eleven, and two feet apart eight plants to a rod; thus the different distances would require considerable difference in the first cost of the plants I presume that the difference in the soil would require a different distance apart, for on a strong soil that would induce a strong growth, by proper trimming the lateral branches would readily fill a larger space than they would in a poorer soil, and this may possibly account for some difference of opinion. Dr. Warder's soil at North Bend, is a strong soil. In my next I propose treating of the manner of trimming hedges.

YARDLEY TAYLOR.

(No. 2.)

In the first number the manner of proceeding for a hedge as far as planting the sets was treated of. The most important part, however, is its future treatment by trimming; on this the whole success depends, if we wish a perfect hedge, and one that will last a long time, and no other should be attempted. On this point no difference of opinion exists among practical hedge growers; they all advocate, and that in strong terms, close and frequent trimmings for four years. The first year, however, they prefer letting the plants grow, to give a strength of roots before commencing close cutting, and this year the ground should be well cultivated, and no grass or weeds suffered to grow to the injury of the young plants. Then the second year before the buds swell, cut the plants clean off at the surface of the ground, this will cause several shoots to put forth from the plant; the object being to get a thick base for the hedge at first start. Should the soil be good, the season favorable and the growth strong, cut down again about midsummer to within two or three inches of the first cut; but if the growth is moderate, the cutting may be deferred till spring. It must then, however, be cut both spring and summer still three or four inches above the last cutting, for the next two years. These cuttings should be horizontal and only made upon the upright shoots, the side, or lateral ones, must be preserved by all means. The philosophy of this mode of cutting is this: all plants have a tendency to grow upright and expend the greater part of their strength in the higher branches; but in a hedge we want the lower branches strong and numerous, and to obtain this, we must retard this upward tendency, and force the growth into the side branches. By cutting the strong and vigorous growing shoots back frequently, we spread the face of the plants over a much larger space, and as a consequence, there is much less disposition to rampant upright growth, and the growth will be much more regularly spread over the whole of the plant. The ground on each side of the hedge should be well cultivated, and nothing suffered to interfere with the growth of the lateral shoots. In three years we then have a base one foot high and probably three feet broad. Now we may commence to trim in a triangular form, say five or six inches high in the centre each time, and straight down to a base of three feet wide, and the subsequent trimmings to be in this way until the hedge is five feet high and three or four feet broad at the ground. It will thus be a good hedge, and a sufficient protection for any enclosure, and then all subsequent trimmings must be as close to former trimmings as possible, so as to keep it at the proper height, and not to allow the upper branches to overgrow the lower ones, lest they be starved out and finally die off, to the great injury of the lower

part of the hedge. This must be particularly attended to, if we want to succeed. The side should never, by any means, be allowed to assume a perpendicular form; but should be kept to that of a triangle, or it may assume something of the form of a gothic arch. In these directions, there is no difference of opinion among hedge growers in the West, they all, without exception, insist upon close and severe pruning on the above principles; they argue, and with reason, that it is useless to attempt to make a hedge without strictly following these rules, and the success that has attended where they have been followed, is good evidence of their correctness.

James McGrew, of Dayton, Ohio, who prepared a prize essay on hedging for the Ohio State Board of Agriculture, says in relation to the business: "It is not to be supposed that an individual without any practical knowledge could successfully cultivate and properly form a hedge. It is really no small matter. It is a work that is to last for generations. Those who attempt to grow a hedge should spare neither care no expense in having it right. If well done, it is an invaluable improvement upon any farm—if not well done, it is an entire waste of time, room and money. The business can only be learned as other things are learned, by careful study and practical experience. It is not a matter to be intrusted to novices, tenants and gardners."

Dr. J. A. Kennicott, of Illinois, says:—'One fact is certain, thick or thin planting, there will never be reliable fence without severe cutting."

The editor of the Illinois Farmer says: 'I would strongly recommend, however, that it be cut back far more severely than usual, in order to give it a thick bottom, for on this its main excellence depends."

The book under review gives the reasons of the general failure of hedging in this country—one is the unsuitableness of some plants for the purpose; but the greatest cause of failure has been, want of proper management, in not cutting the plants down sufficiently to insure a thick growth at bottom, and thus encouraging bottom growth, for if let alone to grow as it pleases, the upper branches will spread and enlarge, and thus rob the lower ones of their share of nourishment, in accordance with the known laws of vegetable physiology. These lower branches thus robbed, put on a feeble growth and finally die, leaving the plant in form of an inverted cone, a form directly the opposite of what it should be. Attempts have been made to remedy this by splashing or bending down, but with indifferent success. But by using the Osage Orange, and cutting back faithfully as recommended, the assertion is fearlessly made, that a good, efficient and very durable hedge may be made, and one that will be an ornament, and of service, no one can say how long.

This plant has the valuable property of standing drought remarkably. We planted a few rods of it in the spring of 1856, and though they grew but little that dry summer, there was very few of the plants that died, and they grew off well next year, though they were on a dry piece of soil of poor quality.

The expense of making a hedge, is estimated by those who have them in the West and made in the best manner, at from fifty to seventy-five cents per rod, when the labor has been estimated as hired, being mostly done by their own hands. There are persons who profess to be practical hedge growers, and will contract to plant and trim and do all the cultivation for four years, or until the hedge is sufficient to turn out for a fence, and give warrantee for its being done well. I see no difficulty in the way of making a hedge here, if undertaken earnestly, and with a determination to follow the rules laid down in Dr. Warder's book. Of course every person who desires to do so should purchase the book and study its contents thoroughly, and then carry them out to the letter. These rules are certainly in accordance with the laws of vegetable growth, and as far as my experience goes, and I have had some experience in hedging on the old plan with the Washington thorn, they are certainly well calculated to ensure success, and such a success would be very desirable, as fencing materials with many are becoming scarce.

YARDLEY TAYLOR.

(No. 3.)

The inquiry that naturally will present itself to the mind of every farmer is, will it be of advantage to me to commence making Osage Orange hedge Those who have stone for fencing, will hardly deem it advisable, and those who have mountain land for timber, may not consider it economy to commence to much extent. But those whose

land now in timber is tillable land, may well conclude that good economy would advise the clearing more of it, and bringing it under cultivation. In this way large additions may be made to our agricultural products, and of course to our profits. From the confidence asserted by the hedge growers of the West, in the plan recommended by them, and looking at the philosophy of the proscribed mode, there is strong ground for believing that it will succeed here, though in many places it may take rather longer time to make a sufficient hedge. Our own experience satisfies us, that it will grow here in almost any soil not too wet. Some may object on account of the protection needed when young; but the prudent farmer may so arrange his crops, that he may have his young hedge in fields under cultivation where stock is not allowed. For instance: suppose a hedge was planted between two fields, one of which was to put in corn the same spring, then move the fence on to the other side and leave it in that field, then put the corn land in wheat that fall, or leave it for corn the second year, in either case put it in wheat for the third year, then move the fence over the hedge on to the other side, and commence a like cultivation of the apposite field, that would give it a protection of four or five years, sufficient to give it a height and strength that would make it secure from stock, and that, too, without any additional fencing or expense, except moving the fence over the hedge, which would be a small matter. After the hedge is considered complete, it will require regular attention to keep it in proper bounds and not allow it to grow too high; this, however, will be much less labor, than that now employed to keep our fences in repair. Where the hedge has been properly attended to, and the growth diffused over a large space, there is much less liability of any shoots making a rampant growth, and are easier kept in bounds. A man with a suitable instrument, it is asserted, can trim from half a mile to a mile of such hedge a day. And this being all the labor necessary to keep them in condition, is certainly a great saving of labor over present practice, to say nothing of the capital necessary in keeping up timbered lands. There could be nothing introduced on a farm, that would add more beauty to it, than to have all the divisions of it bounded by good hedges. And the certainty with which we may expect to obtain coal for fuel, and its cheapness, will prevent the necessity of keeping much land in timber for that purpose.

YARDLEY TAYLOR.

Body and Brain.

When a Mohammedan wishes to pass a very high eulogy upon a deceased friend, he tells you that he "had a good liver," which means that the said friend was always good and pleasant in body and mind. This is a most expressive sentence, especially in climates where the liver is easily affected, and it shows that the sons of Islam are well acquainted with the fact which we wish to enforce, namely, that the healthy action and clear conception of the brain depends more than is generally believed upon a sound and healthy physical organization.

No argument is required to convince every person that, at the present time, they must *think*, would they succeed in life, and that mere plodding is scarcely required, the demand being for educated labor; and this remark applies not only to one trade, but all trades—not to one profession, but all professions—artist and artificer, printer and preacher, all alike. This being granted, it will be seen of what vast national and individual importance it is that the seat of reason should be undefiled, and that the channels of thought should be ever clear and free. A professional humbug who would advertise a quack medicine to overcome that brain fatigue which sleep does not seem to conquer, and to give renewed activity to the worn-out mind, would make a fortune shortly, for the complaint is a common one. Bodily disease, the disregard of the grand physical laws of cleanliness and exercise, inherited sickness and personal intemperance, are the great barriers to true progress which have yet to be vanquished and pulled down.

Let us take the two first, and see how they affect the mainspring of action—the brain. Take the illustration of a watch. The mainspring may be perfectly good and sound, but some little wheel in the train of motion being displaced, it will not tell true time. A spring may be clear when it bubbles forth from the virgin soil, but an impurity in the water course will taint the whole stream. A statue may be graceful in form and elegant in proportion, but when seen in an uneven mirror it becomes distorted and out of shape. The mind may be active, clear, and perceptive; but if some little pinion, some small disease,

ocal or general, be in the body, it cannot act upon the outer world with force and originality, because the medium through which it acts is tainted and unhealthy. Again, if the ear be out of order, the brain can obtain no true notion of sound; if the eye be diseased, a perfect sight is never taken, and the same is true of feeling, smelling and tasting. Now, suppose that instead of any one sense being considerably affected, all are partially so, how then is the brain going to derive impressions correctly, on which to base future thoughts and resulting actions, if the courses through which those impressions flow from the object observed to it are tainted, impure or diseased. Thus we see that the mind and body are so intimately connected that we cannot separate the two, and the one cannot be diseased without affecting considerably the tone of the other. For a mind diseased, or one that may become so—in fact, for every one of us—there is nothing like plenty of fresh air and simple food, a decent modicum of exercise, the encouragement of cleanliness by ablution with cold water, as much of the light of heaven and as little of the light of oil, spirits or gas as possible. If we can but as a people begin to believe this, we shall quickly perceive the truth of the prescription by the happy results which will follow. Let us all, for once, learn something from the children of the Prophet, and strive to earn that eulogy so full of peaceful meaning and pleasant thoughts of contented health: "He had a good liver." *Scientific American.*

Meterology—Interesting Fact.

Without warm breezes and frequent rains, no country is fit for the abode of man. The rains clothe the fields with verdure; their absence makes the land a barren wilderness. On the western portion of our country lying on the Pacific Ocean, a belt of rains accompany the sun in his annual course north and south, and produce the rainy seasons of California and Oregon, without which these countries would be unfit for agriculture. On the eastern side of the mountain ranges of the Pacific, the case is very different; but little rain falls upon the elevations or the valleys, hence there is a wide expanse which never can be inhabited, as it is only a barren waste, and must ever so remain, as all the science and skill of man cannot make the rains, nor change the course of the winds.

Two great ranges of mountains run north and south through our continent, namely, the Rocky Mountains on the west, and the Appalachian chain near the Atlantic on the east. There is a great broad interval between these, which is called the "Mississippi valley." This depression runs north to the Arctic Ocean, and south to the Gulf of Mexico. The western mountains gradually decrease in elevation towards the north, and as there is no northern range, the north and north-west winds have a free sweep down the Mississippi valley; consequently, when these prevail in winter, the cold is very severe on our western prairies; this also affords a reason why it is sometimes colder as far south as St. Louis than it ever is in New York. The Gulf of Mexico is a huge steam cauldron; it evaporates an immense amount of moisture; this is carried up by south winds through the valley of the Mississippi and by south-west winds along the whole eastern coast This moisture as it proceeds onward is condensed, and falls down in grateful showers to refresh the soil, and enable it "to bring forth seed for the sower, and bread for the eater."

As a great amount of electricity is developed by the evaporation of water, the Gulf of Mexico is the principal source of that which is observed during thunder storms; hence the reason why almost all such storms come from the Gulf. The moisture which flows up the great Mississippi valley does not reach far west; seldom beyond the 98th meridian. East of this the soil is fertile, because it is amply refreshed with rains; west of it, up to the Rocky Mountains, denominated the "great American plains," all is a barren wilderness; there is not an object of delight to the eye to be seen. On the Pacific coast, with the exception of a belt along the ocean, barrenness also prevails, owing to the absence of fertilizing showers. Were it not for artificial irrigation, the valley of Salt Lake could not afford sustenance for man or beast. In traversing this great barren track, whole days are passed without meeting with a single spring or rivulet to slake the thirst of the weary traveler. Over the greater portion of Sonora and New Mexico sterility reigns supreme; and at Fort Defiance, a range of fifty square miles is necessary for grazing, and procuring hay for the animals of the garrison.

If the map of the United States is examined, it will be observed that the 98th de-

gree of west longitude divides it into two nearly equal parts. As all the western portion (until the belt on the Pacific is reached) is a barren wilderness, this fact must dissipate some of the waking dreams in which many persons have indulged regarding the future agricultural greatness of the far western portion of our country. The eastern portion of the Mississippi valley, by the laws of nature, must forever remain the granery of the United States. *Scientific American.*

From the New England Farmer.

Golden Eagle.

AQUILA CHRYSAEOTOS.

The most hilly and mountainous parts of the country are chosen by this bird for his residence, particularly where there are overhanging precipices; there in the dizzy height, on some bold rock, he takes his stand, motionless and erect, with his stern, penetrating eye glancing over the boundless expanse of forests and fields; upon such high precipices, or on some blighted tree of the wooded-mountain, a pair of these birds will sit for hours, and not unfrequently the whole day, especially when they have gorged themselves with food. After such times of inactivity, they will launch into the air, and rise in a spiral flight above these stupendous heights, until they appear like mere specks, or are wholly lost to sight; having attained to the desired height, they sail in an obliquely downward course with the velocity of the wind, until within one or two hundred feet of the earth, when they again change their mode of flight and sweep in circles over hills and valleys in search of food.

These eagles usually hunt in pairs. There is a peculiarity in their mode of hunting which is not resorted to by other birds of prey. Like the lion, who lies in ambush for his coming victim, so he hovers over the form of the hare, or the bed of other animals, waiting for their appearance. I once saw a pair hunting in company, and while sailing over a hill, one of them, on discovering a burrow of the common grey rabbit, immediately suspended himself in the air without the least perceivable motion of his body or vibration of his wings, which he kept widely extended, and on which he floated with the same ease that he would rest upon his perch; in this position he remained a great length of time until the animal, unconscious of any harm, ventured from his cover; at first, but a part of him appeared; the eagle, still poised, would stretch down his claws, then draw them up again, still floating silently; the animal now hopped quite out of his hole, stood upon his hind legs, scanning every object with his large eyes, and moving in every direction his large ears, to detect an enemy if one was around him; at last, feeling assured, none lurked about him, he hopped again which brought him to full view, and farther from his burrow. Hark! *Whush-ush-ush*, down from his height, like the whizzing sound of a rocket, shot the eagle upon the unwary victim, pressing him down with his strong feet and driving his talons deep in his quivering flesh. The scream of despair, as the blood oozed through his soft fur, was soon drowned by the eagle's scream of success which was answered by his mate; then rising with him, still struggling in his grasp, he carried him to some convenient place, where both he and his mate might devour him at their leisure.

A. FOWLER.

Danvers, Mass., Dec, 1, 1858.

Salutations among Different Nations.

Translated from the French.

The expressions used as salutations among different nations, have under their aspect something characteristic and interesting even for the most casual observer.

In the East, some of the expressions savor, in a greater or less degree, of the Scriptures, and the serene and patriarchial sentiment of the inhabitants. One recognizes the immobility of these pastoral and warlike people, standing aloof from all human progress.—Nearly all have a foundation in religious sentiments, and express peace to those whom they are addressed. The salutation used by the Arab, "Salem," or "Shalum," means peace, and it is found in the words Jerusalem. The Arab salutes his friend thus: "May you have a happy morning;" "May God grant you his favors;" "If God wills it, you are well." This last expression plainly betrays their fanaticism.

The Turks have a formula which can only be used in a sunny clime; "May your shadow never be less." An Englishman wouldn't think of wishing his friend a fine shadow.

The climate of Egypt is feverish, and perspiration is necessary to health, hence the Egyptian meeting you, asks, "How do you perspire?"

"Have you eaten?" "Is your stomach in good order?" asks the Chinaman, a touching solicitude, which can only be appreciated by a nation of gourmands.

"Good cheer," says the modern Greek, in nearly the same language that the ancients were wont to greet their friends. A charming salutation, which could only have originated among the happy, careless Greeks.

The Romans, who were heretofore robust, indefatigable and laborious, had energetic salutations, expressing force and action.—"Salve," "be strong," "be healthy," and "Quid facias," "what do you?" or "what make you?"

The Genoese of modern times say, "Health and wealth," which is very appropriate for an active and commercial people.

The Neapolitan devoutly says, "Grow in sanctity," and the Piedmontese, "I am your servant." The "How stand you?" of almost all Italy, forcibly indicates the nonchalence of the sunny land.

The Spaniard, grave, hauty and indifferent, wishes you "Good morning," to which we respond, "at your service, sir." Another salutation which the Spaniard uses, "God be with you, signor," shows a melange of respect for one's self religious sentiment.

The ordinary salutation of the German is "Wie gehts?" "How goes it?" and has a vagueness partaking somewhat of the dreamy character of the German. To bid one adieu, he says, "Leben sie wohl," "Live quiet and happy." This last plainly exhibits his peaceful nature and love for the simple joys of life.

The travelling Hollander asks, "Hoe waart's go?" "How do you go?" The thoughtful, active Swede demands, "Of what do you think?" whilst the Dane, more placid, uses the German expression, "Live well—Live well." But the greeting of the Pole is best of all: "Are you happy?"

The English have the "Good Bye," a corruption of the word "God be with you," and some others; but that which exhibits best the character of the English is, "How do you do?" as the activity of this people is shown in this demand where the do is spoken twice. Nothing is more characteristic, more likely, or more stirring than this.

The "comment vouz portes vous?" of the French is equally characteristic. The Frenchman is more active than laborious—more ardent, more passionate, than thoughtful; hence the principle with him is not to do, but to go, to be lively, to show himself. There is something in the expression, "comment vouz portes vous?" "How do you carry yourself?" which bespeaks at once his frank manner and pleasant face.

Walking as an Exercise.

It is well understood that the general health of cities is due to the custom of constant walking, which prevails among the residents of crowded towns. This compensates for the want of fresh and free air. It is certain that city ladies walk much more than their country friends. The latter, when they can command a horse, think a mile's walk a great undertaking. Ladies in the country hesitate about venturing abroad on foot; and they remain within doors, or in quiet inaction, while the city dames, who are presumed to be "delicate," and unable to endure fatigue, walk miles over the pavements, without thinking of the exertion. Visitors to the city from the country are worn out by a day's "shopping," while their city guides are apparently as fresh at the close as in the beginning of the day's work.

Walking is the most natural, useful and thorough exercise that can be taken. Infantry, in an army, can outmarch the mounted men. A proof of the superiority of the biped over the quadruped, is given in the result of a recent wager. A man undertook to walk from New York to Cincinnati in eighteen days, and accomplish the task, with nine hours to spare. The person with whom the bet was made accompanied him in a carriage, and the pedestrian, at the end of the journey, was in better condition than the horse or his driver. This accords with all experience. The human frame becomes insured to wholesome and proper exertion, and the biped gains strength under it, in a greater degree than any quadruped. We have no objection to dumb bells and other paraphernalia of the gymnasium. But none of these contrivances are half so beneficial as the use of our natural means of locomotion.

The people of this republic have the largest continent in the world to travel over, and are, as a nation, the greatest travellers. But while the rail, the river and the horse carriage are all used to the utmost, we walk less than any civilized people under the sun. A man, no matter how much his leisure, or how great his need of economy, would be

thought very poor, or next to insane, who should use his feet for a journey. He would, at the very least, be set down as eccentric or a humorist. Where time is valuable, or strength is to be husbanded for active employment, it is well to take advantage of public conveyances. But if Americans would prescribe to themselves what John Bull calls his "constitutional walk," we should gain in strength of muscle, and banish or diminish the common complaint, dyspepsia. Athletic games are well in their way, but one cannot always get up a cricket or rowing match. The consent of others is required, whereas, to walk briskly and habitually, it needs only that we overcome our own inertia, and disabuse ourselves of the notion that a horse's legs are better than a man's.

No motion calls more of the muscles into healthy play than walking—not gliding like a ghost, with arms motionless, but pushing along, with a hearty, springy swing. Nothing more exhilarates the whole man than a current of air created by his own brisk movements. If this exercise, so conducive to health, and so readily taken, were more in fashion and in favor, we might meet the doctors with an independent air; and as to the nostrum-mongers, starve them into taking up a more useful avocation.—*Philadelphia Gazette.*

The Ice Trade.

One half, at least, of the business and wealth of the United States, has been created by the ingenuity of the American people. What would the production of cotton be worth, an article now our heaviest export in value, but for the invention of Whitney's cotton gin, and the late improvements on it. The articles of cut nails, of the screw auger, of the spiral gimblet, of the solid headed pin, and fifty other things, the value of which we do not realize because we are so familiar with their use, are all American inventions, and have given a spur to business of inconceivable force.

The Ice export is a trade which has grown up within the last few years, and is a remarkable illustration of the business-creating faculty of the Americans. Ice has now become a staple article of commerce, employing in the coasting trade two hundred and fifty-eight ships, brigs and schooners, and for foreign export ninety-five vessels, principally of a large class. Total 353 vessels.

The following taken from the late *American Almanac* furnishes some interesting statistics on the subject:

"The first cargo over taken from the United States, was shipped from Boston, in 1805, by Frederick Tudor, a gentleman who had previously dispatched an agent to the West Indies for information touching the enterprise. The cargo went to Martinique and proved a loss of $4,500, but the projector of the enterprise stuck to it with a continual loss, until the embargo and war put an end to foreign trade. After the war, in 1815, he recommenced the trade by shipments to Havana under a contract with the government of Cuba, which yielded a profit. In the meantime he opened the trade with Charleston, Savannah and New Orleans.

"Up to 1832, the business was confined to the enterprise of this one individual. At that period others embarked extensively in it, and in 1833, Tudor extended his operations to Calcutta, Medras and Bombay. The shipments of ice from Boston in the year 1847, coastwise, amounted to 51,887 tuns making 258 cargoes; shipped to foreign ports 22,591, making 95 cargoes. The freight storage and other expenses on the whole amounted to $335,151. In the same year 29 cargoes of provisions, fruits and vegetables, valued at $75,500 cost, were shipped in ice from the United States, to ports where such articles could not otherwise be sent.

"Eight of the ice houses in Massachusetts, erected purposely for the trade, are capable of containing 141,332 tuns. The consumption of ice in Boston alone, in 1847, was 27,000 tuns, employing 66 wagons in the delivery. In Havana, ice sells for 6½ cents per pound, in Calcutta at 2½ cents in Boston at 13½ cents per hundred pounds on the average. The entire statistics of the ice trade, are highly interesting, not only as evidence of the magnitude it has assumed as an item of commerce, but as showing the indefatigable enterprise of the man-yankee. There is scarcely a nook or corner of the civilized world, where ice has not become an essential if not common article of trade. The city of New York consumes an immense quantity, giving employment to a great number of persons, and involving a large amount of capital."—*Scientific American.*

FRIENDSHIP.—A friend is a person with whom I may be sincere. Before him I may think aloud.—*Emerson.*

From the New England Farmer.

Underdraining—"It Will Pay!"

MR. EDITOR:—Last fall I wrote you under the title, "Underdraining—will it pay?"—that I intended to underdrain a piece of wet, cold, unproductive land, and asked your advice in the matter. It was kindly given, for which I would return many thanks.

At that time I had a presentiment that it would not be a paying operation, but as the land was nearly worthless, as it was, I resolved to underdrain it; which I did with stone, sinking the ditches about three and one-half feet deep. The bottom of the drains was constructed like an ordinary culvert, then filled with cobble stones to one foot of the surface; upon these stones, shavings or evergreen boughs were placed, to prevent the dirt from filling the interstices, then covered with dirt, reserving the sod for the barn-yard.

The result, I will brieffy state. The piece drained contained a little less than four acres. Last year it was mowed, and produced but two loads of poor, sour hay and brakes, hardly worth cutting, but it was an average crop for the land. This spring the land was dry, and we were enabled to work it early in the season. We plowed under about twenty-five ox-cart loads of barn-yard manure to the acre, and planted with corn the 15th day of May. The ground was dry and in good condition for receiving the seed while many pieces considered "dry land" were much too wet. The corn was planted three and a half feet apart each way, hoed twice, and received a top-dressing of plaster and ashes. It was cut up the 10th and 11th of September, when it was found ripe and sound. We husked from the piece 440 bushels of ears, all merchantable corn.

My neighbors concur with me in opinion that this crop is worth more than the aggregate crops that the land has produced for the last fifteen years. It is now in a condition to produce abundantly for a series of years without any extra outlay. This crop has paid me the whole expense of underdraining, and I am so well pleased with the experiment, that I have had a number of ditches dug upon another piece adjoining, and intend to use drain tile instead of stone. The tile drain is cheaper, and from what information I can obtain, I think it much more durable.

Drain tile of a superior quality are now manufactured by Lucius G. Spencer, of this town, and sold at Albany prices. The farms of Windsor county are waking up on the subject. I am informed of one man who intends to lay four hundred rods from the first kiln. JAMES R. WALKER.

Springfield, Vt., Nov. 5, 1858.

From Dickens' Household Words.

Beef, Mutton and Bread.

A council composed of noble and gentle amateurs; a sprinkling of real farmers; a library of books on agriculture which few read; models of implements which few examine; and samples of seeds for which few inquire—these are the components of the Royal Agricultural Society as it exists in the dingy mansion of Hanover Square, London. For eleven months of the year its only sign of life is an occasional discussion, from which reporters for the public press are inflexibly excluded; but, on the twelfth there follows, thanks to railroads, a July fortnight of real agricultural work. Then the whole agricultural element of the district chosen for the annual show is set fermenting by the presence of the most agricultural members of the society, and a general invitation to all England to come forward and compete for prizes with their agricultural implements and live stock. This year the great agricultural holiday was held at Lincoln;—once the nucleus of Roman roads; now in the centre of one of the finest farming districts in the country, and connected by railways with every county between Plymouth and Aberdeen.

Eighty-four years ago, Arthur Young, one of the most far-seeing and graphic writers on English agriculture, made the journey from Peterborough to Lincoln on horseback, occupying twice as many days as a railway train takes hours; following ancient ways; partly of Roman construction, and passing over causeways through seas of fresh water, which now, thanks to the Cornish steam-engines, have been drained into fat pastures, where, on every acre, an ox or cow, bred far north, can be fattened for the London market.

As I approached Lincoln to be present at the fourteen days' show, the evidences of the Past and Present met me on either hand. Of the present, in the shape of solemn but amiable-looking bulls, carefully

clothed in slices of Brussels carpet hemmed and edged with tape; heifers of equally pure blood, and Leicester and South Down sheep, all riding comfortably in railway trucks. A real monument of the Past rose on Dunston Heath:—Dunston Tower, erected in the last century as a light-house to guide travellers across the black moor between Spilsby and Lincoln,—a waste then, but now the centre of farming as fine as any in Europe: at least so I was told by a tall, rosy, wiry, pleasant-faced farmer, in a full suit of shepherd's plaid. And here I must note that the real John Bull farmer, whom artists of a waning school depict in top-boots, seated before a foaming jug of nut-brown ale, and beside the portrait of a prize ox, seems to have been improved out of the country. My closet researches at Lincoln did not discover a single specimen.

There was no mistake about the character of the meeting; it did not require top-boots to indicate that it was not scientific, nor antiquarian, nor literary, nor military, nor commercial; but, that it was simply and solely agricultural. The whole multitude of strangers who crowded the street,—studying the Latin motto of "Floreat Lindum" inscribed in red letters upon white calico, on the arch of evergreens, or holding conversations round the steps of the hotels—had a breezy, out-of-door, healthy, tallyhoish appearance. Black, bay and gray horses, of huge proportions, gaily adorned with ribbons (the unmistakable sires of London dray-horses,) were led carefully along towards the show-ground by the only top-boots extant. Roan Short-horns, red Devons, and white-faced Hereford bulls; cows with interesting calves; and plump heifers, paced along with a deliberation and placidity worthy of their high breeding. It is only young Highland kyloes and Scotch runts that played wild tricks, and scampered, as Leigh Hunt said of certain pigs, down all manner of streets. Anon came a select pen of ewes, or a ram, conducted with a sort of care we can imagine the sultan's guard to bestow on an importation of plump Circassian beauties.

Guided out of sight of the bovine and ovine procession by the shrill squeal of discontented Yorkshire pigs nearly as large as, and much heavier than, Alderney cows; across the bridge over that Witham stream through which Romans, and Danes, and Saxons, and Normans, successively rowed on their way to Peterborough; along a gay and dusty road, where stood those wonderful works of art dear to my childhood's dreams;—Wombwellian wild beasts painted on acres of canvass, in the most exciting situations; at length I reached the show-yard. The parallelogram of some four acres contained an epitome of the materials and tools which make modern British agriculture what it is. There were instruments for cultivating all sorts of soils; and live stock which can be sent to the butcher's in one-fourth the time that our ancestors found indispensable for producing fat meat. In natural course the implements come before the stock which they have helped to bring to perfection.

The first operation for bringing our food into a condition fit for the butcher or the baker is to turn over the soil; for which, the best implement that has yet been invented is a plow. In the Lincoln yard there were not less than thirty-nine sorts of iron plows, for every degree of work, from scratching the turf to turning up the earth twenty inches deep. Those who have seen the rude plow still in use in the South of France and Italy (where the team is often composed of a dwarf milch cow, a donkey, and a wife; the husband holding the one stilt) will be surprised to learn that in seventeen hundred and thirty a plow was made at Rotherham which was better than those even now in use in the worst-cultivated counties of England and Wales; and that, so far back as sixteen hundred and seventy-seven, subsoiling or loosening the earth very deep so as to let water fall through and fibres of roots to penetrate—one of the most valuable improvements of modern agriculture, which we now owe to Smith of Deanston—was practised by a young man of Kent. But in agriculture, above all other useful arts, improvements and inventions not only travel slowly, but are often despised during the lifetime of the inventor; and, after him, are forgotten.

The frame of the most approved plows is made of wrought, the share of cast iron, case hardened; the coulter, or cutting-knife, being of iron and steel. They are provided with wheels. It requires three or four ploughs of different construction to do the work of a single farm thoroughly.

After the ground has been plowed, it requires to be broken into as fine a condi-

tion as possible, to receive seed. For this purpose, on the continent and in Australia, a thick bush is often used, such as Gervase Markham, writing in sixteen hundred and eighty-eight, recommends in his Farewell to Husbandry. "Get," saith he, "a pretty big white-thorn tree, and make sure it be wonderful thick, bushy, and rough grown." The bushy tree was thrown aside for a harrow of wooden spikes; which has since been superseded by instruments of iron, such as harrows and scufflers, or scarifiers, by which the soil is cleaned, stirred, and broken up to a due degree of fineness. Of these several sorts of earth-tortures there were thirty-five oxhibitors at Lincoln. With such a choice there is no difficulty in selecting implements which, whatever the quality of the soil, will pulverize the clods left by the plow, clear away the weeds and roots, and cover with earth the seeds sown over the surface.

Next in order come a set of machines invented in consequence of the introduction of such portable manures as guanos, nitrate of soda, soot, salt, superphosphate, &c., which it may be advisable to distribute broad-cast in a liquid state. A few years ago the farmer was entirely dependent on farm-yard manure; which, still valuable, is bulky, expensive to move, and even when dug in, not sufficiently stimulating for certain crops. It is advantageous, for instance, to force forward turnips with great rapidity, in order to place them beyond the ravages of the fly. To this end chemistry is always at work to find or to compound new manures. Bones were a great discovery in their day; but now, fossil bones of antediluvian beasts are, with sulphuric acid, made useful for growing roots to feed Christmas bullocks. Bones were the earliest portable manure used for turnips,—first nearly whole; then crushed; next, on the suggestion of a great chemist, dissolved in sulphuric acid; and now distributed over the land in a water-drill. Portable manures are expensive, and machine distribution is more regular and economical than hand-casting. At Lincoln, mechanical invention was found keeping pace with chemical discoveries. Ten sorts of machines were there for distributing portable manures in a dry state, the last and best being the invention of a young Norfolk farmer, and constructed by a village blacksmith.

The ground manured, is ready for seed. In certain cases both are put in at the same time. The ancient sower—whose race is not wholly extinct—fastened the seed round his waist and shoulder with a sheet, and dextrously cast the grain right and left as he traversed the field; but, in seventeen hundred and thirty-three Jethro Tull, who nearly touched without actually grasping, some of the greatest improvements in agriculture, invented a corn and turnip-drill and a horse-hoe for ridging up and clearing weeds away; an operation only to be done by hand-labour after broad-cast sowing. But in this he was before his time. Yet his contrivance has since been adopted and improved upon sufficiently to yield samples at Lincoln, from thirty exhibitors. Among them were three liquid manure or water drills, which were invented about ten years ago, and pushed into notice within three. These are now making rapid way among the turnip-sowers, in light, level, dry districts.

The horse-hoe naturally follows the drill, whether to scuffle up weeds or to embank earth along the sides of roots. Formerly the great obstacle to the use of implements which enable farm work to be done by mechanism, was a state of society and a system of poor-laws which gave the farmer no choice between paying poor-rates or wages for labourers he was better without; but farmers in eighteen hundred and fifty-four have no fear of surplus labour or of overwhelming poor-rates; consequently, specimens of twenty horse-hoes of every degree of ingenuity were scrutinized at Lincoln, and largely purchased. The latest invention was a rotatory hoe, invented last year by a Norfolk farmer, which thins out turnips with marvellous swiftness and exactness; thus promising to supersede the degrading hand-labour of the Norfolk gangs of boys and girls.

After crops are fairly sown, hoed, and weeded, the next operation is gathering; this brings us to carts and wagons; the wheels of which are made by machinery, at some of the large implement factories, at the rate of thousands per annum. Twenty-one horse carts were shown; and it is to be hoped that by degrees the lumbering, ill-balanced vehicles seen in too many English and Irish counties will be superseded by the light Scotch cart.

But before carting comes mowing, and reaping, and hay-making. In grass-mow-

ing no machine has yet superseded the scythe. But every year spreads more widely the use of the hay-making machine, a revolving cylinder with prongs, which, driven by a horse, lightly tosses the grass, and saves half the work of the hay-maker. Four such machines by different makers were shown; the best were ordered in greater number than the makers could execute. This machine, like the horse-rake (of which a dozen were displayed in the Lincoln yard,) is one of the simple implements that every farmer short of his usual supply of Irish labourers (now better employed in tilling the backwoods of America) should use; for it can be kept in order without the help of a skilled machanic.

The history of the reaping-machine, from the days of Pliny to the contrivance of the Scotch minister, Bell, is too large and interesting to be dismissed in a paragraph. It must for the present be enough to say, that in the field-trials at Lincoln there was nothing more exciting or comical than the straggling competition between the machine reapers, when they charged into the standing corn, and cut and laid it down ready for the binders at the rate of at least two acres per hour. But some other time the story of the reaper—a real romance—must be told.

Passing now from the field to the rick-yard, the rick-stand must not be overlooked. It is a pillar and mushroom cap of stone or iron, to lift the rick from the ground; and to cheat—as we learnt at the late Durham Assizes—rats and mice of no less than forty per cent. of the grain per annum; yet hundreds of farmers will not spend a shilling on rick-stands.

From the rick the next step is to the barn machinery; and what a step!—from the clay thrashing floor, and the flail stupifying the thrasher and wasting the corn; and the rude winnowing machine dependent on a breezy day, to the beautiful steam-driven thrashing-machine, by which corn is thrashed, winnowed, sacked and weighed, while the straw is hoisted to the straw-loft, to be there, if needful, by the same steam power, and by one operation, cut into chaff for cattle. At Lincoln there were upwards of twenty-five thrashing machines exhibited, the greater number of which would thrash corn at about ninepence a quart, or less than half the cost of hand-labour. Yet it is only within the last five years that this machine driven by steam-power has invaded some of the best corn-growing counties in England.

Last in the list comes steam-engines; which steam food, cut chaff, pulp roots, thrash grain, raise loads, pump water, and drive liquid manure through pipes, at an insignificant expense; permitting a farmer to be always ready to send his crops to market at short notice. Without pretending to examine those bewildering conjunctions of cranks and wheels, the mere fact of five-and-twenty steam-engines entered for agricultural use, at prices beginning at one hundred pounds, shows the road the British farmer is now marching. Ten years ago, half a dozen agricultural steam-engines, consuming double the quantity of fuel now required, were gazed upon—in England, though not in Scotland—as curiosities. Now it pays twenty-five makers to send these weighty specimens as showcards to farmers whenever and wherever the Royal Agricultural Society holds its meetings.

The criticism of the practical men who travelled from all parts of the kingdom to review the implement show at Lincoln, proved that a large number of farmers had fully discovered the value of coal and iron—that coal and iron are as effectual in producing motive power for agricultural operations, as for driving spinning jennies, and propelling steam vessels. There is still at least one hundred years of darkness and prejudice between the districts where such sentiments are held, and where the wooden wheelless plow, the clumsy harrow, broadcast sowing, hand-hoeing, flail-thrashing, undrained land, and ill-housed stock, are the rule. Not that any number of implements, or the study of any number of books, will make a farmer. Science, to be useful, must be sown on a practical and fruitful soil. The keenest steel axe must be wielded by a practised hand.

Having raised our crops by a good use of the implements in the Lincoln yard, we must now turn to the live stock.

The short-horns—arranged in order, bulls, cows with calves, and heifers, in the rich variety of colour peculiar to the aristocracy of the ox tribe—come first in view. Some strawberry roan, some red and white, some milk-white; but all so much alike in form and face, that to the uninitiated, the

roan bulls might be all brothers, and the white cows all sisters. Short legs, vast round carcases, flat backs; not an angle nor a point, except at the muzzle and the horns —are the characteristics of the descendents of Collings' Durhams. A little farther on, the bulls, quite as large, are the Herefords, red, with white faces, and here and there white bellies; the cows smaller, with less of a dairy look than the short-horns. Third in order appear the Devons, in colour one deep red, with deer-like heads; plump but delicate and small in stature. These three breeds, of which a hundred and seventy-one specimens were sent, represent the best beef that England, after about a hundred years of pains and experiments, can raise. All English herds of cattle maintained on first-rate farms are one of those three breeds —short-horns, Herefords, or Devons. Scotland has breeds of its own. The Argyle ox, in his improved shape, is one of the legacies of Duke Archibald, Jeannie Dean's friend, bred on the hills and vales of the Highlands, and which, fattened in the private yards of London, Norfolk, and Bedford, produces beef second to none. The Ayrshire cow is unrivalled for dairy use. But, as these are not bred in England, they do not come into competition in a show of English breeding stock.

The sheep shown for prizes are subject to as few divisions as the cattle. There are pure Leicesters (once called the New Leicesters; but the old have all died out;) the long-wools, not being Leicesters, of which the prime victors are all Cotswolds; and the short-wools, or South Downs, a class under which rivals from Wiltshire and Norfolk compete with Sussex, the cradle of the improved breed. As for pigs, they are divided into large and small only, although known by many names.

Considering how much of our domestic happiness and public prosperity is dependent on a supply of prime beef in steaks, sirloins, and rounds; on chops, legs, and saddles of mutton; on streaky rashers, and Yorkshire and Cumberland hams, it will not be be time wasted to explain how it comes to pass that in every county of the kingdom there are to be found not only wealthy amateurs, but practical farmers, who devote their whole time to produce prime animals of pure blood, not always at a profit; and how the country gains from stock so plump, cubical, and unpicturesque; for it is not to be gainsaid that the wild cattle of the Roman Campagna or the Andalusian pastures are more suited to figure as models for the painter than under the knife of the carver. A Yorkshire farmer remarked when shown the Toro Farnese, that "there could'nt be many prime cuts sliced out of *him*."

By the exertions of only a few zealous agriculturists, during the last hundred years, good meat has been placed within the reach of the people at large. The roast beef of Old England, which some fancy to have been the ordinary fare of our ancestors in the days of Queen Bess, was really and truly the tough and tasteless produce of lean, black, worn-out draught oxen, or leathery old cows, and that only procurable fresh for four months in the year. Those who have travelled in the South of Europe or on the Rhine, have seen the greyhound-like pigs, the lean, gaunt sheep, the angular and active cows unincumbered with sirloins and almost destitute of lungs, which pick up a miserable existence on the roadsides. A hundred years ago, with a few rare exceptions, the ordinary breeds of live stock in Great Britain were just as lean, ill-shaped, and slow-growing. And to those who inquire what we have gained by the enthusiasm with which noblemen and gentlemen have followed cattle-breeding, it can be answered, that the ox, which used to be with difficulty fattened at six years old, is now presentable in superlative condition upon the Christmas board at three years old. The sheep which formerly fed in summer and starved in winter, until five years old, are now fit for the butcher in twenty months, with a better and more even fleece. And the pig which formerly ran races until two years had passed, is now fit for the knife after eating and sleeping comfortably and cleanly as a gentleman should, for nine months only.

This change has been brought about partly by the improvement of our agriculture, a closer study of the habits of animals, and an increased supply of food placed within our reach by extended commerce, and a rational system of customs duties; and partly by discoveries in the art of breeding. Formerly our cattle and sheep were entirely dependent on natural herbage for their food. In summer they grew fat, in winter they starved and grew thin; having nothing to depend on but such hay as could

be saved. The first great step, therefore, towards the improvement of cattle was the employment of the turnip and other roots which could be stored in winter. An experienced farmer calculates that with roots, oxen improve nearly one-fourth more than those fed on hay alone. The use of turnips enabled sheep to be fed where nothing but gorse or rushes grew before. Neal, the mechanic, stepped in with a chaff-cutter, prepared hay and straw to mix with roots, and, with a turnip-cutter, saved six months in getting sheep ready for the kitchen.

The use of a dry, palatable, nutritious food, called oil-cake, which could be carried into the field to sheep to help out a short crop, followed; and further studies proved the use of peas, and beans, and foreign pulse in giving lambs bone and muscle. It was found, too, by experiment, that warm feeding yards saved food; that, in short, the best way of getting stock into prime condition was to feed them well, to attend to their health, and never, from their earliest days, to allow them to get thin.

But before these dicoveries had been made, the breeds of English live-stock were in regular course of improvement. No kind of food can make an ill-bred, ill-shaped beast fat in time to be profitable. Just as some men are more inclined to get fat than others, so are some animals; and by selecting individuals of proper shape with this tendency, certain breeds have been stereotyped into a never-failing type: that type in an ox and sheep is one which presents the largest extent of prime meat and least amount of offal; or, as a South Down breeder expressed it—"a perfect sheep should be, as nearly as possible, all legs and loins of mutton."

To make this improvement, required a certain talent, enthusiasm, and years of patience. Breeders of pure stock, like mechanical inventors, do not, on an average, make money. On the contrary, for the pleasure of the pursuit and the hope of success, they expend large fortunes; while a few win great prizes. But the country gains enormously in result; for now, the same space of ground will feed more than twice the quantity of beef and mutton that it would fifty years ago. The animals not only come to maturity in half the time; but, fed partly in yards or stalls, they spoil less ground by treading, and return to the soil highly concentrated and productive manure.

The first man who made stock-breeding a fashionable pursuit—and that is a great thing in a country where fashion rules too much—was Robert Bakewell, of Dishley, in Leicestershire, the son and grandson of farmers; but, if we mistake not, himself a barrister. With horned cattle he aimed at the cardinal improvements which are now universally established and admitted in this country where the growth of meat—less than the dairy, as in Holland and Switzerland—is the principal object. He tried to produce a large cylindrical body, small head, small neck, small extremities, and small bone. He said that all was useless that was not beef; and sought, by choosing and pairing the best specimens, to make the shoulders comparatively small, and the hind quarters large, which is exactly the reverse of animals allowed to breed freely, and to gallop at liberty over wide pastures. Even the cattle of Australia bred from pure specimens, after running wild for a few generations, begin to lose the fine sirloins of their English ancestors, growing tough and stringy for the spit in proportion as they become active.

In sheep, Mr. Bakewell declared that his object was mutton, not wool; and, disregarding mere size which is a vulgar test of merit, he chose animals which had that external form which is a sign of producing the most muscle and fat, and the least bone; and, by careful selection and breeding, he stamped a form on the Leicester sheep which it retains to this day.

The South Downs, doubtless an indigenous breed, feed on the bare pasture of the Southern coast, produce a fine quality of meat, and a close, short wool. It was the turnip that rendered feeding the South Down while young possible. The great improvement began with John Ellman of Glynde, near Lewes, in the year seventeen hundred and eighty. He preserved the form of the original breed, but corrected the too great height of the fore quarters, widened the chest, made the back broader, the ribs more curved, and the trunk more symmetrical and compact. The ancestors of the present race were rarely killed until the third or fourth year. They are now sent to execution at two years, and sometimes even at fifteen months old. They have since spread far; superseding the

breeds of Berkshire, Hampshire, Wiltshire, crossing and altering the Shropshire, extending into Dorsetshire, Surry, Norfolk, Devonshire, Herefordshire, Wales, and even towards Westmoreland and Cumberland, and have improved all the breeds of black-faced heath sheep.

The crowning events in the history of beef and mutton bring us back to agricultural shows, which were established by James Duke of Bedford at Woburn, and by Mr. Coke, afterwards Earl of Leicester, at Holkham. At these "sheepshearings" the great houses were thrown open to agriculturists of all countries and counties. Stock were displayed, implements were tried, prizes were distributed, and gentlemen of rank and fortune, of all opinions and politics, threw themselves with enthusiasm into agricultural discussions, and enjoyed the excitement of hospitality, competition, and applause. For instance, in seventeen hundred and ninety-nine, we find in the Gentleman's Magazine, in an account of a Woburn sheepshearing, held on the twenty-first of June, names since become classical in connection with pure breeds: Coke of Norfolk; Quartley, from Devonshire; Parsons from Somersetshire; Ellman, from Sussex; worthy successors, in the cattle-breeding art, of Bakewell, the brothers Collings, Tompkins, Lord Somerville, and several others. "From one hundred to a hundred and ninety sat down to dinner for five days successively. Premiums for cattle, sheep, and plowing were distributed, and his Grace let about seventy South Down and new Leicester rams for one thousand pounds. The conversation was entirely agricultural, and the question was discussed whether the new Leicester or the South Down were the better breed of sheep."

Lakes

Are insoluble compounds, formed by precipitating coloring matter with an earth or oxyd. The chief lakes are *carmine*, obtained from cochineal by precipitation with Roman alum; *Florence* lake, prepared by the same process from the sediment of cochineal, by precipitation with solution of tin; and *madder* lake, prepared from Dutch crop madder by precipitation with alum.

Scientific American.

Champagne Wine—Some Curious Facts about it.

Where one line has been written in America about champagne, an hundred baskets have been drank. It is, *par excellence*, the fashionable and the favorite wine of the Americans. It is always on our dinner tables—we call for it from the frescoed ceiling of our New-York-hotel diningrooms, till we reach the outskirts of our Western wildernesses. We call for it in the cabin of the steamship, no matter on what ocean she is floating—we drink it at the head-waters of the Missouri, at the cataracts of the Nile, at the sources of the Amazon, on the vales of the La Plata, and at the falls of the Ganges. If there be a good genius in wine (and a thousand inspired odes to Bacchus have said there was) that good genius lurks under the champagne cork. It is a wine better suited to our climate than any other, for it has the inimitable gift of creating an impromptu inspiration; and even when used with a hardly justifiable freedom, the mists which it scatters over the memory are more readily dispersed by a few hours of balmy slumber, and the invigorating breath that comes with the pure air of the rising sun.

And yet we have taken very little pains, and had very little curiosity, to learn the origin and history of this unrivalled accompaniment to the scenes of joyousness and luxury that brighten and embellish our social life. We will furnish such a brief history of champagne wine, as the fruit of our observations in the champagne districts of France, where all the champagne of the world that is genuine is made, can give. Champagne is an artificial wine. Perhaps it would be better to say a compound wine; for in no instance is it the simple juice of the grape, corked up after fermentation. It may, when well made, be quite as pure; but certain elements are combined in the manufacture of a fine champagne, for which we depend solely upon art. Therefore the quality and flavor, and the value of champagne, always depend upon the flavor of the ingredients used in the manufacture, the processes by which it is carried on, and the skill with which it is perfected.

There is no champagne of reputation that is made without being composed of a mixture of the wines of various vintages, or vineyards.

All the champagne wine worth speaking

of in the world comes from the Champagne district, which is about thirty miles long and from one and a half to three miles broad. The river Marne flows through the whole district, augmented by the numerous tribute streams that come rippling down from the circumjacent hills. This is the only district of France where grapes are grown which produce a juice specially adapted to a champagne wine. There is, indeed, the sparkling hock of Germany, and the *vino d' Asti* of Italy, both of which have, in a natural state, some of the qualities, especially the effervescing ones, of champagne. But, in no part of the world have soil, science, labor, or capital, combined with success to produce real champagne except in the beautiful valley of the Marne. There are the favorite spots for growing the champagne grape—as famous as the vineyards on the south side of the island of Madeira, which from the period of the Romans, has been known as the chief seat of that delicious grape which makes Madeira. So, too, along all the southern slopes of Spain and Italy, and through the extent of the Mediterranean, between the bases and the summits of the hills, where neither the moisture of the valleys nor the chills of the mountains interfere with the genial and delicate process of maturing the luxurious grape.

It is well known that the flavor of all wine, in a natural state, depends upon the chemical qualities of the soil, the dryness or the moisture, the heat or the cold of the atmosphere, and other natural causes, which in the invisible and beautiful operations of chemistry, produce these results. The odor of the flower depends not alone upon the species, or even the family to which the plant belongs. Some species, by being transplanted, change their perfume; and some have been known to lose it altogether. It is one of the nicest and most delicate and difficult problems in agricultural chemistry, to ascertain how the highest flavor or ordor can be infused into the plant, or the flower.

In the Champagne district, as well as in many other vineyard regions of France, and other wine countries, the grape is cut down, within from two to twelve inches of the ground, every year after the vintage is gathered, and the sap has retired to the root. Our vine-dressers in America may learn a lesson from this. If we would cultivate these varieties of grapes, this pruning should be thoroughly done in the Fall. This is true of all grapes which produce their fruit from the new growth of the stock exclusively, and why all the pruners should cut everything down to near the surface, leaving only the eyes, from which the germs of the next spring will burst.

Our American readers must not fancy the Champagne district to be one of the warm, blushing valleys of the south of Italy. This district is the latitude of Canada, and they have cold winters there. So when the process of pruning the grape in the Fall is finished, the remaining stock is protected sometimes, and all the grapes that are to be grown next year, must come from the new shoots. When thus cared for, the grape vine takes to growing in the root, and these roots elongate themselves sometimes for enormous distances. In Italy, and in some other portions of Europe, we have seen grape vines run immense distances, with branches lopping down and rooting again, and still growing with the utmost luxuriance, when the parent stock itself had rotted off above the ground from which it grew. Thus it is no uncommon thing in Italy to find grape vines that have been in the soil, probably for ages, producing from the original root or branches that sprung from it, without transplanting, for a period of 500 years. This fact is so well known to students of Oriental history, that it grew into a proverb at least four thousand years ago, when in "the good time coming" of the prophets of Judea, it was declared that every man should sit under his own vine and fig tree, having none to molest or make him afraid.

Some grapes attain their perfection in four, five, or six years. This is the case generally with the champagne grape.

The champagne grape produces from one, to half a dozen bunches on every stock, except in poor years, as they have recently experienced several in France. But there is no relaxation in setting out new plants, or forcing the yield, whether it be a good or bad year. Neither science nor experience has yet been able clearly to ascertain the causes of failure of the grape crop.

The champagne grape matures later than many other varieties, chiefly because it has greater acidity. The champagne vintage begins about the 20th of September, and ends by the 15th of October. This period there, resembles the season of cotton picking in the South, when the whole force of

the district is called into requisition, and they work on night and day. In both cases, the labor must be done quick, for a heavy storm, or a long period of damp weather, would produce ruinous consequences, leaving the grapes so wet, that even if ripe, they would become mouldy and musty, and the exquisite aroma be utterly destroyed.

Great pains is taken in the process of getting the juice out after the grapes are gathered. They are brought in baskets, and on being delivered, are carefully looked over by the hands in the establishment, when the best clusters are placed in large tubs, containing one or two hundred pounds each. These grapes are purchased by the buyers of large establishments, who are always on the spot, with their orders or money. When a sufficient quantity is collected, they are carried to some place in the neighborhood, where they are pressed; and thus a fair experiment is made, and the result known. The juice is then sold to the larger dealers. But recently the more common mode has been for the large manufacturers of champagne to send their agents out through the grape districts, to purchase the grapes themselves, and do their own pressing. They thus find that they can produce a greater uniformity of quality, and assimilate their different wines into a more perfect compound. The present manner of pressing grapes does not differ essentially from what we call, in New England, the old fashion cider press. On a platform of from four to twelve feet square, the grapes are thrown into what cider-makers will understand as a cheese; and through the orifices in the bottom and in the sides of the press, grapes will, by their own weight, exude the juice, which is of course the purest and the best, not being mixed with any impurities that come with the clusters when impregnated with any of the bitter or obnoxious flavor of skins or stems. In any vintage the juice gained by the first process is the finest. But the juice of the grape has to be produced by artificial pressure, which forces it out, and although sometimes differing in color—the coloring matter being chiefly in the skin of the grape, since the juice of nearly all grapes is very much alike in appearance—it is perfect.

Very little of the champagne that we use is made from the first quality of juice. It never could be manufactured and sold for the prices of a sham article. It is dealt in only by houses of the first reputation. Most of the champagne drunk in America comes from suspicious quarters, and we may be very thankful when we get the fruit of the grape: for, except in rare cases, we are sure to be deceived.

The juice of the grape being thus collected into a thousand or ten thousand pipes, the fermentation must first take place. This is completed in a few days, when the taster of the establishment (no mean personage) goes through, and ascertains the amount of acidity on the one side, and saccharine matter on the other, in every cask. Whichever quality is lacking is supplied at once by adding sugar in the one case, and wines of a different quality in the other.

It is a nice process to determine and regulate the flavor, the bouquet, and the body of the champagne wines. It is well known that manufacturers of the greatest experience and reputation, have had more faith in learning to discriminate in the natural qualities of different vintages of the champagne wine, than they have had in the application of chemical ingredients of an artificial description. Thus the wines of different fields, or even different vintages, are successfully combined by skillful tasters, who thus produce a result finer, perhaps, than could be reached by the production of any one vintage whatever. The taster is the man upon whose judgment the process depends.

Thus, when the mixtures are complete, the wine is put into large vats, containing from a thousand to five thousand bottles, where it remains until it is drawn off. By this time it has perfected itself as far as it can, when it is put into bottles and deposited in the coldest cellars that can be made. When the spring comes on, the second fermentation of the wine takes place, and this is often attended with a heavy loss by the breakage of bottles. But those which stand the racket are then carefully wired for a year or two, and laid down flat, when a sediment gathers on the lower side of the bottle. The bottles are afterwards turned to stand perpendicular, and shaken every day, until the sediment which forms comes to the top, leaving the wine clear. After this period the bottle is not disturbed until the final process is reached, when this sediment must be got rid of, and it is to be done by a very rapid and skillful movement.

The string is cut and the cork goes off with a pop, and with it all the sediment that

had been collected. Then a small percentage of the finest crystallized sugar, with from one to three per cent. of the best brandy in the world, is added to supply the vacuum made by that small portion of wine which escaped. The bottle is instantly corked firmly, and the wine is ready for exportation.

The reason for putting some sugar in, is to overcome the asperity, roughness, or even bitterness, which might be detected in the best vintage by a fine palate; and this infinitessimal quantity of brandy is added as a corrective, to produce a chemical whole, combining and blending all the elements together. A powerful machine drives the cork home, and thus from five hundred to ten thousand bottles a day, pass through a great establishment. The government of France reported last year something like sixteen millions of bottles exported. The German States consume five millions, while England takes only about six hundred thousand; France, Belgium, and Spain, consume but two millions; other smaller nations in the aggregate use but two, and the balance comes to the United States.

It will thus be seen that we drink more champagne in America than all the rest of the world put together. Every quality of it is sent here, and almost any quantity without labels, that each dealer will put on what label will best suit his customers, varying the price as he can make it, for it is absolutely within our own knowledge that we have drank champagne of all prices and all brands, at the same table, when there was but one quality of champagne under all the brands, and that of the most infamous description.

The most popular, and the most reliable champagne wine known in America, has for more than a generation been the Heidsieck champagne. More bottles of that brand have been sold in America than of any other; and our readers being more familiar with it, we will add one word of history in regard to the name. The facts we are about to state, we give with some confidence, for we get them from Rheims, the head-quarters of champagne.

There are three houses in Rheims that make use of the name Heidsieck on their corks. The first member of the Heidsieck family that established himself at Rheims, was a Mr. Florent Heidseick, the great uncle of the gentleman now known throughout the world as the proprietor of the *Charles Heidsieck champagne.* They have merited the confidence of the commercial world—they have always had an agency in New York, and only one agency at a time. That agency is now at 100 Pearl street, with the firm of T. W. Bayaud & Co. This is the only place in America to go to, to have the genuine Charles Heidseick champagne.

Democratic Age.

Printer's Devil.

WE HAVE so frequently been asked by friends and others, why the boy in the printing office is called the "devil," that we conclude to give what little we know upon the subject.

The first persons who carried on printing to any extent, (if they were not the actual inventors of the art, as asserted,) were John Guttenburgh, John Faust, (or Faustus,) and Peter Shæffer. Germany was the place the art was invented and first carried on. The following story is told of the first introduction of printing in France:

"In 1592, Faust carried a number of Bibles into Paris, which he and his partner (Shæffer) had printed, and disposed of as manuscripts; at this time the discovery of the art was not known in France. At first he sold them at the high price of five or six hundred crowns, the sum usually obtained by the scribes. He afterwards lowered the price to sixty, which created universal astonishment; but when he produced them according to the demand, and even reduced it to thirty, all Paris became agitated.

"The uniformity of the copies increased their wonder, the Parisians considering it a task beyond human invention; informations were given to the police against him, as a magician; his lodgings were searched, a great number of Bibles were found and seized; the red ink with which there were embellished was said to be his blood. It was seriously adjudged that he was in league with the devil; whereupon he was cast into prison, and would most probably have shared the fate of such whom ignorant and superstitious Judges condemned in those days of witchcraft. He now found it necessary, in order to gain his liberty, to make known his discovery of the art. This affair gave rise to the tradition of 'the Devil and Dr. Faustus,' which is handed down to the present time."

The ignorance and superstition that considered printing an invention of the Evil One, would also very naturally suppose the men engaged in it as being the servants of Satan, if not actual fiends in human shape. It is universally considered that the above story gave rise to the practice of calling the office boy by the name of "Devil."—*"Printers News' Letters"*

Wanted—A Young Man of Industry, Integrity, &c.

This meets one's eyes daily in the columns of "Wants," and it is true as the Pentateuch. Wanted! Of course they are —always wanted. The market can never be overstocked; they will be called for, and never quoted "dull" or "no sale." Wanted for thinkers, wanted for workers; on the main, in the field, and in the vast forests.

Tools are lying idle for want of young men, a pen is waiting to be wielded, a tree to be felled, a plough to be guided, a village to be founded, a school to be instructed.

They talk about staples and *great* staples. Honest, industrious, able young men are the staple in this world of ours. Young man, you are wanted; but not for a doctor. No, nor a lawyer. There are enough of them for this generation, and one or two to spare. Don't study a "profession," unless it is the profession of bricklaying or farming, or some other of the MANUAL professions. Don't use tape if you can help it. It is honorable and honest, and all that; but then, perhaps you can do better. Of all things, don't rob the women. It is their prerogative to handle silks and laces, tape and thread. Put on a hat like a man, don an apron, and go out of doors. Get a glow on your cheeks, the jewelry of toil on your brow, and a good set of well developed muscles. We would go, if we could; but then we were young longer ago than we like to think, and you know when one's "old he can't."

Besides, if you become a doctor, you'll have to wait. "Because you haven't experience," says an old practitioner; "because you are too young," says all the women. If you are a lawyer, and likely to rise, they will put a weight on your head, a la Swiss, to keep you under; or if you make a good argument, some old opponent, as grey as a rat, will kick it all over by some taunt or other, because you were not born in the year *one*. And so it will go, until you grow tired and soured, and wish you had been born a tinker, perhaps an immortal one, or anything but what you are.

Be a farmer, and your troubles are over, or rather they never begin. You own what you stand on, from the centre of the earth up to the skies, as they used to say; you are as independent as possible all day, and tired, not weary, at night, for there is a great difference between the two words, if one stops to think about it. The more neighbors you have, and the better farmers they are, the more and better for you.

There is one thing, young man. You are wanted. A young woman wants you.—Don't forget her. No matter if you are poor, with proper economy you will soon be rich and happy. Don't wait to be rich. You need a companion while you live, and not after you have done living. Effort is life, and cessation therefrom a grand and gloomy "has been." So do not wait till it is all in the yesterdays; if you do, ten to one if you are fit to be married. Marry while you are young, and struggle up together, lest in years to come somebody shall advertise "Young Men Wanted," *and there's none to be had.—B. F. Taylor.*

Leaks Simply Stopped.

The *Lynn News* says:—"Some years ago I had a leaking 'L.'* Every northeast storm drove its waters in. I made a composition of four pounds of resin, one pint linseed oil and one ounce red lead, applied it hot with a brush to the part where the 'L' was joined to the main house. It has never leaked since. I then recommended the composition to my neighbor, who had a dormer window which leaked badly. He applied it, and the leak stopped. I made my water-cask tight by this composition, and have recommended it for chimneys, etc., and it has always proved a cure for a leak."

* The valleys of an L shaped house.

For the Southern Planter.

Palpitation of the Heart.

Mr. Editor—The remedy for this uncomfortable affection which you mention in your February number as recently recommended, viz. "deep inspirations and subsequent holding of the breath," I accidentally discovered thirty years ago, and have since always used when necessary.

I mention it not in derogation of itis originality, but in confirmation ef its efficacy.

February 1859. SUBSCRIBER.

Gypsum—Who Introduced It?

The Editor of the Southern Planter will find herewith an article on the first introduction of gypsum, which was elicited by enquiries which I was induced to make of some friends in Pennsylvania. It was sent to me in manuscript for the Planter, but was soon after published in the American Republican and Chester County Democrat. Chester County is one of the finest farming districts I have seen, and this account of the introduction of gypsum is most satisfactory, and will be useful I hope in reviving its reputation, lately overshadowed by guano. My own firm conviction is, that the more guano is used the more plaster should be. In proof of the strength of my convictions, I remark that I use from 10 to 20 tons of guano, and from 40 to 60 tons of plaster. A farmer may profitably use a bushel of plaster every year for each acre of land he has in grass or under cultivation; and it is undeniably the cheapest of all fertilizers. Use others as far as prudence may justify—but do not fail to use this *freely*.

THOS. W. MERIWEATHER.

[*From the American Republican.*]

In view of the important results which the use of Plaster of Paris as a fertilizer has produced in our agriculture, the interesting question presents itself, "Who first introduced it to the notice of the farmers of this country."

To Franklin, among others, has this merit been ascribed. It has been reported of him that, whilst residing in France as our Minister, having observed the importance of plaster to the agriculturists, upon his return he determined to present it to his countrymen by an ingenious devise. He is said to have strewed plaster upon a public lot, so as to form this sentence, "This is Plaster of Paris;" the increased luxuriance of the grass where the plaster was placed, attracting the notice of farmers, induced them to adopt its use in their agriculture. This anecdote is so like Franklin that it seems to have obtained extensive credence; investigation, however, disproves its correctness. But as Pennsylvanians, we have reason to congratulate ourselves that the merit is due to our late distinguished fellow-citizen, Judge Peters. The following letter from N. B. Worthington, Esq., assistant Editor of "The American Farmer," to Doctor Thompson, of Washington, many years President of the Delaware State Agricultural Society, places this matter in a clear point of view:

OFFICE OF AMERICAN FARMER,
BALTIMORE, March 8th, 1858.

Dr. James W. Thompson:

DEAR SIR:—Mr. Sands has handed me your letter addressed to him, and making inquiry as to the introduction of the use of gypsum into this country. Having had occasion recently, in preparing an article on the subject of gypsum for the Farmer, to look into the matter, it gives me pleasure to be able to give you the desired information.

I do not find in the first place, either in the *memoirs of the Philadelphia Agricultural Society* nor in the old series of the American Farmer, that the credit of its introduction is anywhere given to Dr. Franklin. On the contrary, in both of these works, but especially the former, there is abundant evidence that the credit is justly due to Judge Peters, of being the first to test its value, and in the most industrious and persevering manner, to bring its valuable qualities to the notice and knowledge of the agricultural community.

His own experiments with it, commenced about the year 1772, and his own observations, through many years, and the results of a most laborious correspondence are embodied in his "*Agricultural inquiries on Plaster of Paris,*" published first in 1797 and reprinted and bound up with the 2d volume of the memoirs of the Philadelphia Agricultural Society in 1810.

Of the circumstance of the first introduction of gypsum, Judge Peters gives the following account in a paper read before the Philadelphia Society in 1807, and which will be found in volume 2d, page 161 of the memoirs.

"The first time I saw the agricultural effects of the gypsum was several years before the commencement of the Revolutionary war, on a city lot, belonging to, or occupied by Mr. Jacob Barge, on the commons of Philadelphia. He was the first person who applied gypsum to Agricultural purposes in America; but on a small scale. He showed me a letter in German, from one who had gone over from Pennsylvania to Germany for redemptioners as was customary at that time. The writer sent over a specimen of the gypsum, and desired Mr. Barge to seek for land in this, then province,

in which it could be found. He wrote Mr. Barge word that the discovery was then of no long standing in Germany, and that it had been accidently made by a laborer employed at mixing stucco mortar at a large building—the path along which he passed to his home, threw up on each side a luxuriant growth of clover, which he attributed to the dust from his clothes, and made experiments which resulted in the discovery." "Burr millstone makers, and stucco plasterers," continues the judge, "were the only persons acquainted with any of its uses in this country. From one of the former I procured a bushel; which enabled me to begin my agricultural experiments; and I faithfully pursued and extended them as I obtained more means. A quantity imported as ballast, (I believe 20 tons) and thrown on a Philadelphia wharf, without a knowledge of its value, was the first important foundation on which the extensive improvement of our husbandry was established. When I had convinced myself of its efficiency, I disseminated the knowledge I had acquired, through many parts of Pennsylvania; and sent samples to Jersey; New York, and I think Delaware, (then called the lower countries) and Maryland. In the same paper the Judge makes mention of an English turist, Strickland, and calls his statement with reference to the introduction of plaster, an item in the catalogue of his mistakes.

"He attributes the introduction of plaster into this country, to the Germans of Lancaster County, in this State. But this assertion is entirely unfounded. When I first sent samples of gypsum into that county, very soon after I was acquainted with it, I perceived the Germans there to be totally ignorant of its existence, and of course of its agricultural uses. More than ten or twelve years elapsed before they could be prevailed on to use it freely."

In the 7th volume of the American Farmer, first series page 20, is an extract from an address of Robert Vaux, before the Philadelphia Society, which fully confirms Judge Peter's account of the matter; nor can I learn that it was ever questioned by any one professing a knowledge of the circumstance.

Nor did the Judge confine himself to making known the value of this fertilizer. He set on foot inquiries and investigations which led to the discovery of gypsum in great abundance on this continent—by which means it is furnished us now at so low a rate as to bring it within the means of the most poverty-stricken.

In the range of new things, and perhaps in some measure on account of its very cheapness, gypsum is comparatively out of fashion. The article on the subject in the last Farmer, was written for the purpose of directing attention to its great value. Such a paper as you propose would, no doubt, aid that design, and we shall be very happy to receive it, or any thing else with which you may favor us.

Yours dear sir, very respectfully,
N. B. WORTHINGTON.

The Native Merchants of India and China.

The statements of intelligent voyagers and travelers all concur in the opinion that the greatly increased commerce between these Eastern nations and England, and the United States, with the high prices which have been paid for the products of those densely populated regions of the Asiatic continent, have given enormous wealth to the shrewdest of the native merchants, and that the profits realized by them are vast and beyond calculation. So strong have they become that they make their own prices, and have altogether the upper hand of the European traders, except the Greek merchants, who from long experience and assimilating to a great extent with the natives, have become in reality merchant princes. The immense commerce of Calcutta is, to a great extent, controlled by two or three Greek houses.

In China, many of the native merchants are exceedingly wealthy and transact extensive business. It was stated a short time since, that in the English island of Hong Kong, on the coast of China, near Canton, of one hundred square-rigged vessels in the harbour, eighty were either owned or chartered by the Chinese merchants. The great proportion of house servants, store porters, clerks, mechanics and laborers, in Hong Kong, are Chinese; while the petty shop keepers, cattle drivers, boatmen, etc., are mostly Malays. Many of the Asiatic nations are largely represented at Hong Kong. There are also many Grecks and some Arabs. Of the Chinese population, estimated at 70,000, only about 300 are women.—*N. O. Bulletin.*

The Wool Trade.

The comparative table of imports of wool at Boston, as per George Wm. Bond & Co.' Circular, as follows:

	1854.	1855.	1856.	1857.	1858.
England	1,031,879	325,529	41,375	3,126,883	1,162,898
Buenos Ayres	3,973,936	970,810	1,883,125	2,260,011	1,643,857
Turkey	4,315,380	3,195,367	2,505,590	5,241,082	2,001,792
France	388,396	204,785	33,691	507,236	22,058
Cape of Good Hope	450,487	117,680	570,740	2,506,716	1,984,372
Brazil	5,606	. .	32,958	5,496	. .
Peru and Chili	2,533,609	2,402,601	3,211,467	3,045,440	3,578,446
British Provinces	473	1,063	4,619	24,191	13,252
Dutch West Indies	3,170	. .	. .	. .	. .
Malta	491,154	. .	142,722	293,023	. .
Scotland	73,855	. .	. .	. .	. .
Tuscany, &c.	32,163	. .	. .	. .	58,500
East Indies	12,974	. .	. .	281,026	64,213
Austria	176,733	. .	. .	107,771	. .
Spain	. .	. .	. .	74,451	. .
Russia	. .	. .	. .	356,034	. .
Sandwich Islands	. .	. .	. .	2,440	9,805
Northern Africa	. .	. .	. .	131,281	. .
Sundries	1,948	24,980	. .	. .	1,751
	13,398,503	7,245,996	8,425,807	17,941,081	10,550,849

U. S. Economist.

Cotton Trade of England.

The returns of the British trade for eleven months, to the close of November, show some very singular results, as compared with the previous year. The imports of raw material in Great Britain have been as follows:

		1857.	1858.	Decrease
Cotton	cwts.	7,667,051	8,050,914	....
Flax	cwts.	1,776,023	1,172,204	603,819
Hemp	cwts.	702,783	740,174	....
Silk, Raw	lb.	9,605,493	5,686,423	3,919,070
Silk, Thrown	lb.	607,890	340,667	267,223
Wool	lb.	110,995,577	107,519,851	3,475,726
" Alpaca	lb.	2,200,177	1,998,531	201,646

The increase in cotton is altogether from the United States, the decline being nearly one-half from India. The decline in the receipts of materials from India and China is as follows:

		1857.	1858.	Decline.
Cotton	lb.	223,677,300	121,552,700	102,124,600
Silk	lb.	8,918,680	5,130,477	3,788,203
Wool	lb.	16,922,118	14,662,804	2,259,314

This gives a decline of over $35,000,000 in the value of produce received from Asia. On the other hand the value of cotton alone sent in that direction has been as follows:

	1857. Yards.	1858. Yards.	1857. Value.	1858. Value.
China	110,760,781	123,134,830	£1,421,030	£1,614,408
East India	422,295,299	723,962,287	5,147,372	8,497,189
" Yarn	17,080,349	33,188,226	994,890	1,763,125
Total			£7,565,292	11,874,772

There has been a value of $15,000,000 less cotton received from India, and a larger

value by $22,000,000 exported thither, making in that article alone a balance more favorable to England than last year. The result is not very encouraging for a supply of cotton from that country. The same result must necessarily attend any movement in new countries for the planting of cotton. The demand for clothing will always far outrun the ability to raise the materials, but the material and the demand may both grow so as to employ British machinery in that new field of enterprise. There can never, however, be derived a larger supply applicable to the wants of present cotton users. The aggregate exports of cotton goods from Great Britain for the 11 months, has been as follows:

	1857. Yards.	1858. Yards.	1857. Value.	1858. Value.
To United States.....	169.985,234	124,535,675	£2,933,432	£2,102,554
Elsewhere.....	1,678,390,741	1,984,756,386	23,943,190	26,903,177
Total.....	1,848,375,975	2,109,292,061	26,876,622	29,005,731

This is an unusual development of the cotton trade. The export of weight in goods is 107,000,000 lb greater, and the import weight of raw material 44,000,000 lb greater. Hence, a larger amount of cotton in the aggregate has been exported than imported, while to the United States alone the reverse is the case, there having been more cotton received there and less goods sent. The result shows a remarkable health in the cotton trade, as well as in the general state of business.—*Ib.*

Cotton Manufactures of Great Britain.

The documents of the State Department contain the following comparative figures of the cotton factories in the United Kingdom:

	1856.				1850.
	England.	Scotland.	Ireland.	Total.	
Factories.....	2,016	152	12	2,210	1,932
Spindles.....	25,818,516	2,041,629	150,512	28,010,217	20,977,017
Looms	275,670	21,624	1,633	298,847	249,627
Males.....	148,354	7,609	1,223	157,186	141,501
Females.....	192,816	27,889	2,122	222,027	189,423

The number of spindles, it appears, increased 40 per cent., and the number of looms 20 per cent., but the number of male hands employed only increased 11 per cent., and of females 15 per cent. This fact shows how much more cloth was produced in 1856 without manual labor than in 1850. If the looms produced only about the same number of yards each, then 20 per cent. more cloth was produced in the aggregate, with only 10 per cent. increase in the hands, but the number of yards resulting was much greater. The official reports give the number of lb of yarn spun in 1850 at 526,125,000 lb, or 24¾ lb per spindle. In 1856, the weight spun was 819,375,000 lb, or 29¼ lb per spindle, showing an average increase of production of 4½ lb per spindle. The number of yards produced in 1850 was 4,188,544,000 yards, or 4,750 yards each loom. In 1856, the product was 1,934,265,000 yards, or an average of 6,447 yards per loom, being an apparent increase of 35 per cent. in the make of each loom. Such has been the apparent increase in the improvement of machinery, by which its productive power has swelled the number of yards, that the same number of hands can turn out. The same result has manifested itself in this country with greater force. Annually, the number of people required to produce a certain number of yards is diminished, and with the diminution the cost of production. When machinery comes in so marked a manner to supply the labor of hands, that difference which was formerly supposed to exist between the cost of labour, and these become equalized, since machinery will work as cheaply here as there, and to this circumstance no doubt is due the rapidity with which American goods supplant the imported ones of late years, and the increasing weight which the same duty has upon a particular class of goods. This applies to cotton and dress goods which come more directly into competition with the imported articles. There is no reason why all that pertains to skill, design and machinery should not take that lead in this country, if the supply of mere labor is less. The main difficulty is, however, that the labor here is not sufficiently divided. In woolens, particularly,

the branches of the business should be separate and conducted each by responsible heads, as yarn workers, weavers, dyers, finishers, &c., as is the custom abroad. The acquired skill and economies of each department make a much cheaper aggregate in the finished cloth than when all these departments are conducted by a corporation, which employs persons not directly interested in or responsible for the economy and perfection of the details. There is here great room for reform.—*Ib.*

The Southern Planter.

RICHMOND, VIRGINIA.

Articles intended for publication in our paper should be marked, "For the Southern Planter."

Do not write on both sides of the paper. If this rule is not regarded, mistakes are very apt to occur in printing.

Letters containing money, or pertaining to business connected with this paper, should be directed to August & Williams, or to the Southern Planter, *and not to the Editor individually.* This last request we make because we do not attend to the keeping of our books, and do not always see the letters as soon as they come to the office.

TO CORRESPONDENTS.

We are always grateful to gentlemen who furnish us with well written articles for our columns; but they would lay us under additional obligation, if they would *leave their names with us*, when they are too modest to append them to their communications. Frequently we wish to write to them and to ask for further favors from them in the epistolary line—but cannot do so, in consequence of not knowing to whom we shall address our letters. If each correspondent (of every Agricultural Journal) would give with his communication, his name and address, we believe it would be the means of producing much benefit, by eliciting a lively and more constant interchange of opinions and agricultural experiences, among all who are interested in agriculture and its associate branches. The chief benefit, we think, would result from the good example set the diffident, who would perhaps follow when they would not lead. In this manner we should have a greater variety of subjects introduced through the Journals, with of course a fuller description of them, and more light, and more interest added to every department of science in which farmers should have an especial desire to make safe and sure progress.

Explanatory.

The "Devil" of our Printer's establishment has lately played us a prank, which proves very troublesome to us in its consequences. *He*, with the spirit of mischief ripe in him—altered our card offering (when more than half the year had transpired) the Southern Planter for 1858, at one dollar and a half per annum, so as to make it appear that we charged only this sum for the present volume.

We knew nothing of this misprint until an old subscriber called at our office, and directed our attention to this change, of our notice, *too late for correction in the February number*, most of our subscribers, having had the paper mailed to their address. It is almost useless to say therefore, that *this card was entirely unauthorized by us.* It has caused us a great deal of vexation, besides much loss of time in explanatory correspondence.

We would be very glad to have it in our power to furnish the Southern Planter to every body at a less price than we are compelled to ask for it now—but unfortunately we cannot afford to print it, at any price less than $2 per annum. We suppose that the fact is well known to the public, that many accounts standing on the books of all subscription papers, are a dead loss to Editors. We are no more exempt from such loss, than the rest of our brethren, and can only do the best we can under all circumstances, to furnish the Planter at $2 a year *as long as it will pay its own expenses.*

If, therefore, any subscribers who (in consequence of the printer's mistake in dates) have sent us one dollar and fifty cents to pay for the present volume, think they cannot, or will not take the paper at our established price, we will render them all the amends in our power by refunding them their money, upon application.

Our offer to furnish the Planter for 1858 at

$1 50, was made late in the year, in order that we might get rid of a large supply of "*back numbers*," which we had on hand at that time.

We are very sure that we shall not incur the censure of a single generous man, in consequence of the mistake referred to—while we very greatly regret its occurrence.

Fine Stock, Cattle, &c.

We will be obliged to those of our subscribers, who own fine stock of any sort, if they will furnish us with descriptions of them.

We want to know where they may be found, that we may have it in our power to furnish information on this point to those of our friends who make inquiries on this head, at our office.

We will readily forgive them, if they *brag* a little sometimes, as we think a man very excusable for pride of ownership, when he has a beautiful animal, which by his skill, energy, and care has been rendered attractive in appearance, or valuable for good qualities.

Mr. S. W. Ficklin of Albemarle county, has kindly sent us Alexander's catalogue and history of the Short Horn or Durham cattle. We return our thanks for it, and give in our present number an extract from it, which we think will be interesting to our readers.

Mr. Ficklin is himself a successful and liberal breeder of fine stock, and we take the liberty of making the following extract from his letter to us. Speaking of Short Horns, he says:

"I have a four year old bull,—three cows, &c. Heifers in calf, and a five months bull calf. Also some twenty odd nearly thoroughbred cows, and heifers in calf to my bull.

"I have, by way of contrast, a fine Devon cow, and an Alderney bull calf. But Short Horns are the cattle for all who will give them a good share of grass, and *rational* winter keep. They will mature at three and a half years—are better for beef—as good as Devons as milkers, but *not equal* to them as work oxen."

Peabody Corn.

We have received a letter from one of our subscribers, in which this corn is highly praised. This is the first word of commendation, we believe, ever sent us of this high priced article. We notice in the *Southern Farmer* a communication from one of its correspondents, who has had a very different experience from our friend. We have never tried it, and never will, as long as it is sold at so high a figure.

Last year we planted some corn raised by Dr. John R. Woods, of Albemarle, Va., and some of the "Hicks' Prolific." We were much pleased with both varieties, as we made a good crop, in spite of an unfavorable season. We paid for the "Hicks' Prolific," $2 a bushel. A neighbour of ours, who planted it in the spring of 1857, told us he made on a piece of meadow land rather more than ten barrels to the acre.

We append an extract from one of our exchanges.

"I have no allusion now to patent churns, patent washers, patent coffee-pots, or even to patent medicines, but I allude to a certain kind of remarkably prolific corn, originated, puffed and sold, at a great profit, by Mr. Peabody, of Georgia. I was fortunate enough not to get caught in this trap myself; but I have no doubt many did, and, like Franklin, found, when too late, that they had 'paid too much for their whistle.'

"I was presented by a friend with a handful of this Prolific corn, planted it in good ground, at a good distance from all other corn, and cultivated it with care, and the result was, that not one-fourth of the stalks had even two ears on them, and all of a very diminutive size. If any others have had better success, Messrs. Editors, I should like to hear from them. J. R. B.

Fine Horses.

Our advertising sheet contains the pedigree, &c., of "Trojan," a thoroughbred Premium Stallion, and a fine specimen of this class of horses. Also the description and pedigree of "Scrivington," a very fine imported Cleveland Bay Stallion.

We hope every public spirited owner of a good Stallion, will be amply repaid for his efforts to improve the breeds of our horses, and that the time is not far distant when the "Old Dominion" may with truth and pride, assert her claim to the possession of the *finest* specimens, of every class of horses.

The Stallions now advertised in the Planter, are well worthy of the support and patronage of breeders.

Mr. Kettlewell.

☞ See the advertisement of Mr. Kettlewell, which is of sufficient interest (apart from its advertising intent) to make it worthy of perusal for the sake of entertainment. Mr. Kettlewell thinks that the present laws of Russia relating to the importation of Tobacco, to that country, will soon be so altered as to create a larger demand in that market for this crop. We hope this may be so, as we shall have a largely increased quantity of it for sale, in consequence of so many farmers turning their attention to it, who have hitherto, not attempted its production.

Oats.

The time for sowing having arrived, we devote a short space to the consideration of this crop. By many farmers, oats are considered greatly exhausting to land—much more so than any other article raised for provender. We do not agree with those entertaining such an opinion, but believe them less exhausting to land than wheat or corn—while as an article of food for stock, we believe they have no equal. They are easily digested, and hence cause no overweight and distention of the stomach. This is an important item in their favor, as food for horses of quick draft—rendering them less liable to founder, and loss of spirit, while on the road. Every good horse master knows, that his horse cannot travel well, with his belly filled up to its utmost capacity, with heavy food of any sort. His diet, when he is called on to go a lively gait, should be so regulated, as not to task the muscles of digestion and locomotion at the same time. Oats are considered best for securing this condition, by many horsemen. We believe they are. We have seen the opinion expressed—we do not now recollect where—that a good crop of oats on a farm, amounted to an insurance of the lives of the stock to be fed upon them, since they were thus rendered comparatively free from attacks of those diseases generated by disorders of the stomach and bowels—worms included.

Every farmer, therefore, should raise as many as he can, without over-cropping himself. Most persons, we think, would make better crops of them, if they would sow them *thinner*. It is no unusual thing to see from two to two and a half bushels sown to the acre in this vicinity. We have been told by an old, and unusually successful farmer, that "a bushel and a half of oats is enough to sow on any acre of land." In our own experience, we have observed that our crops, sowed *thickly*, promised well at first, and yielded badly at harvest. Oat blades branch a great deal, and require room for so doing. Thickly sowed crops, rarely branch at all—besides, the lower leaves almost invariably turn red, and the straw is short enough to cause much waste in harvesting.

We think it best to sow them as early in March, as may be practicable. We would say in February, if the weather and condition of the ground suited for plowing and seeding. We once tried the experiment of sowing a lot in February, and made a better crop from the piece of ground, than we received from the same quantity seeded in March.

A gentleman who formerly resided in this county, and who owned a poor farm, was famous for his good crops of oats. Upon being asked the secret of his success, replied, "I sow in February, and you in March." Oats are not as easily killed, as is generally supposed, by cold weather, if they are covered with a single plow, which is my method of putting them in.

Kossuth.

We call attention to the advertising sheet of the Planter, in which will be found Mr. H. J. Smith's card and challenge. We are glad that this fine stallion will stand the present season at his old stable. There is yet a sufficient demand for his services in the immediate vicinity of Richmond, to make it certain that he can be kept at home with profit to his owner.

We return our thanks to our friend Dr. Eustace for his information about the "Sweet Potato." In a future number we will give the analysis, which may be found in White's "Gardening for the South."

The Farmer and Planter—published at Columbia, South Carolina—R. M. Stokes, Editor. Price $1 a year, in advance.

This paper comes to us in a handsome new dress. Its contents are interesting to the friends of Agriculture, giving as it does a variety of able and valuable articles on husbandry. We hope Mr. Stokes will meet with success in his Editorial efforts, and by them find his position as Editor made both profitable and pleasant.

The former Editor in his retirement from the post which he has so long adorned, has our best wishes for the happiness which he has so well earned as a faithful servant of the agricultural public.

The Rural Annual and Horticultural Directory, for 1859. Published at Rochester, New York, by Joseph Harris. Price 25 cents.

We return our thanks to the publisher for a copy of this neat and valuable annual—illustrated with seventy-five engravings, and replete with instruction on Orchards, Gardens, Cattle, &c., &c.

We heartily commend it to the public.

Valk's New American Style of Architecture.

We return our thanks to L. B. Valk, Esq., Architect, 627 Broadway, New York, for a handsomely executed design of a cottage residence, which is neat, economical and finely finished. The design does credit to Mr. Valk's taste and skill in his profession. We shall be glad to witness an increasing attention to ornamenting and beautifying the country homes of our own State —especially, since we can procure for them, beauty without any sacrifice of comfort and proper economy.

The cost of Mr. V.'s design, is $2,200 complete.

Our Agents.

The following gentlemen have kindly consented to act as our agents, and are authorized to give receipts in our names for payments due the "Southern Planter," by either old or new subscribers:

Jno. W. Burke, Alexandria, Va.
Major P. Williams, Washington City, D. C.
Wm. F. Catlett, Guiney's Depot, Va.
Turner & Acree, Walkerton, K. & Q., Va.
John T. Childrey, Henrico.
James N. Goldsborough, Easton, Md.
Geo. C. Reid, Norfolk.
Benj. F. Gresham, Newtown, K. & Q., Va.
F. N. Watkins, (at the Farmers' Bank,) Farmville, Va.
Samuel Sands, Esq., Baltimore, Maryland.

For the So. Planter.

February 8th, 1859.

Mr. Editor—Will you please inform me through the Southern Planter how *Copperas* should be applied on land as a manure, and if any of your contributors, or yourself, know to what it can be most advantageously applied, and very much oblige,

Yours, very respectfully,
A Subscriber.

We have never used copperas in any other way, (as a manure) than by sprinkling a strong solution of it over manure heaps, for the purpose of "fixing" the ammonia contained in them. It is very beneficial also as a deodorizer or disinfectant, when applied in the same manner, over the floors of stables, privy vaults, hog pens, &c.

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For the Southern Planter.

Earth and its Herbs.

[*The spontaneous products of the earth considered in connection with the peculiar character and condition of the soils upon which they grow.*]

While endeavoring, in that small way to which the unlearned are restricted, to make some examinations into Agricultural Geology, I have, again and again, had my attention called to the long recognized fact of the connection between a soil and its flora.

We are assured by the great masters of science, that, from a view of the physiognomy of a district,—that is, from a view of its natural scenery, together with its vegetation, the skilful geologist is often prepared to arrive at a surprisingly accurate determination of its geology. Indeed, there can be but little doubt of the intimate connection between a soil and its vegetable productions,—the dependence, that is to say, of the latter, not only for vigor, but specific character, upon the former. But, when we ask if this relationship,—this dependence is of such a nature as to afford hopes that a closer investigation of its laws may lead to useful results?—we have a question before us involved in innumerable difficulties and obscurities. Here and there, bearing upon it, are facts so palpable as to impress us with the belief that they must be but single features of some great system of truths, that we have, in so far, gotten hold of: yet, when we enquire further, we meet with disappointments, perplexities, and seeming incongruities. May not these, however, arise chiefly from our want of knowledge? want of correct observation? want of sufficiently close scrutiny and examination? Other subjects appear to have been involved in as great, or even greater obscurity and confusion, which have, nevertheless, been brought within the cognizance of science, and found to be subject to, and under the influence of determinate laws. Indeed, we know that the whole universe is governed by such laws: a system of government, by the way, especially adapted to the condition of fallen intellectual creatures. Man is obliged to examine into, and avail himself of these laws for his temporal happiness and well-being.

As to the vegetable world, many of its laws are known: and some of them relating to the subject we are considering, are constantly made use of, although they are but very imperfectly and vaguely comprehended. Every experienced farmer, for instance, upon an examination of a field, readily forms an opinion, —and generally a substantially correct opinion,—of its character and adaptability to particular crops. Some time since, I met with my father's manager, upon a piece of ground which he was beginning to have fallowed for oats, and asked his opinion of it. He was

wholly unacquainted with the field, having never seen it in cultivation. Crushing a newly made furrow with his foot, and casting his eye over the hill,—for this field lies upon a hill-side,—he pronounced it to be "good land, very good; coarse, but light and free: a good soil for oats and corn, and probably for tobacco, if manured." Now, I know that this opinion is correct. This hill presents a tolerably fair specimen of the lands of the *Guinea region*,—(a district somewhat noted for its enduring fertility.) The hill is made up of porphyritic granite; that is, granite with distinct crystals of feldspar. Its principal mineral ingredient is glassy feldspar. The soil is grey, coarse, light and free. There are a few loose fragments of hornblende, scattered over the summit of the hill, with crystals on their surfaces brilliant and distinct, the accompanying mineral, probably feldspar, having mouldered away. This field has not been in cultivation for a number of years, and its principal growth, especially abundant on the side of the hill, is mullein, crab-grass, running briers, cowhage and broom-straw, with some green-sward, this last no more plentiful than other plants not mentioned. I allude to this case, merely because it has recently come under my own observation, as an instance in which an experienced eye, by an examination of a soil and its vegetable products, was able to take in enough to give a correct idea of its value. But instances are not needed; for the farmer constantly recognizes this fact in his practice. With an observant eye, he marks the vegetable products of a field, and from the quantity and quality of these, makes an estimate of its fertility, and of its adaptability to particular crops.

Now, where the whole presents a truth, the parts must contain the elements of that truth. Where a broad view can thus lead to general deductions, which are substantially reliable, it is surely reasonable to entertain hopes that a closer scrutiny may lead to particular results; that a more intimate acquaintance with the facts from which these general deductions are drawn, may afford information of importance, both as to its character and extent; and that, especially in connection with the valuable, but somewhat vague and not sufficiently reliable hints afforded by geology and chemistry, a more comprehensive and definite knowledge of the indications given by the vegetable productions of a soil, as to its character and condition, may prove of great service.

But how is such knowledge, except on a very contracted scale, to be acquired? How are the various facts known to separate individuals, to be so concentrated and arranged, that the observations and experiences of one person, may be of profit to another? It is in regard to this question, and with the hope of calling attention to this highly interesting subject, that these remarks are made, and with no thought of conveying information; for, as to myself, I am not a farmer, and my observations have been confined to a narrow range, and are very limited; and this subject is one so broad in its reaches, and so environed with difficulties, that no single individual, whatever his opportunities for observation, could hope to compass it. One method, which seems to be possibly practicable, presents itself. If those who are interested in these enquiries will set themselves to gather up such facts, as may fall within their observation, and will make plain and circumstantial minutes of such facts, and communicate them to the *Editor of the Southern Planter*, (who is *ex-officio*, guardian to some extent of the agricultural interests of the State;) or to the distinguished *Chairman of the Executive Committee* of the Agricultural Society, (if that "noble and great-minded" man can be led to undertake the investigation:) such a ground-work may be laid out,—such a nucleus of well digested facts formed, as will ultimately lead to as full and perfect a development and arrangement as the subject will admit of.

We know that there are laws governing the vegetable world, upon which plants depend for their existence and vigor; we see that some of the more obvious of these have been observed; have been taken hold of and brought into service: but we have reason to believe that only the most obvious, and but few of these, and these only to a partial extent, have been as yet apprehended, and that a wide and as yet unexplored field, in connection with this subject, lies open before us; for I am not aware that it has ever, anywhere, met with due examination. In the first volume of the *Farmer's Register*, (page 702,) is an extract from the *Revue Encyclopedique* on the "*nature of earths with reference to the growth of plants*," which is as follows:

"The report of M. M. Thenard and Sylvester, in a memoir upon this subject, by M. J. St. Hilaire, is to the following purport. The author remarks that most persons who have analyzed arable earths, [soils,] have taken exclusively such as had been cultivated, and in which the original constitution had been more or less altered. He believes that the various kinds of earths, in their first state, have peculiar powers of nourishing particular plants; and thinks that the exact knowledge of these peculiarities would enable cultivators to put those seed in the ground which are most suited to it. From various analyses, he draws the following inferences: 1st. That all earths are composed of silica, alumina, lime, magnesia, &c., in different proportions, together with a vegeto-animal matter, which is more abundant as the earth is more fitted for the nourishment of plants. 2ndly. That plants placed in earths of which the constituent parts have an analogy with the particular nature of the plants, do not exhaust the soil. 3dly. That a series of

observations on the different species, genera and families, which grow naturally and in great numbers, perpetuating themselves on certain soils, with the analyses of these soils, would be of great utility in agriculture. The reporters think that agriculture would draw from such labors general inductions, rather than positive directions, but still that these would possess great interest."

There are portions of this extract which appear to bear upon this subject. I presume that only *primitive* fresh lands, such lands as have never been cultivated, are included under what this author denominates "the first state." But whatever he may mean by this expression, I think it no less certain that the "peculiar powers of nourishing particular plants, which he attributes to this state, may with equal propriety, be attributed to the second, third, or any other state of soils: and further, that to every state of the soil, as well as to every kind of soil, there is a corresponding grade of vegetation. There are certain plants which will flourish and prevail during certain stages of a soil's fertility, which will not be found upon it during other stages: while there are some, which, owing to its peculiar chemical constitution, will never flourish upon it, unless this be changed. Of the inconceivable myriads of seeds which the weeds and grasses annually bear, and which, being in various ways scattered abroad, spring up all over the face of the earth, it is manifest that those only will be able to push their way among their competitors and grow luxuriantly, which find something in the soil upon which they are cast adapted to their particular requirements. Should a plant requiring for its healthy growth and condition, a plentiful supply of lime, for example, spring up in a soil where there is little or no lime, it would of necessity have to yield to such of its competitors as do not depend on a supply of this earth for their perfect development. There are certain plants which are never found except in particular localities. I have never seen hoarhound, catnip, or wormseed, (*chenopodium anthelminticum*,) growing far from the haunts of man and his dependents: and I think that melilot-clover, (*melolotus alba*, or white melilot,) only grows with any remarkable degree of luxuriance upon, or near the sites of old buildings; while many of our wild grasses and weeds are never, or rarely found in such localities. Broom-straw and hen-nest grass, for instance, are seldom, if ever seen disputing the ground with the four plants just mentioned.

But vegetables not only require the existence, or non-existence of certain chemical elements in a soil, but also demand certain *conditions of the soil*, for their healthy production; so that two soils may yield precisely similar analyses, whose natural productions would, nevertheless, be markedly different; in which cases, if we understood their peculiarities, the vegetable productions of soils would certainly afford the best means of ascertaining their capabilities and adaptabilities in reference to particular crops. A certain degree of porosity, lightness, or mellowness of the earth, is requisite to the healthful development of various plants. Thus, should a plant delighting in a loose, friable soil, germinate in earth very close and compact, it would certainly be surpassed, and would probably be quickly smothered by others to whose nature and wants such a soil is better adapted. Throughout this immediate region, and I know not to how great an extent of country this remark may apply; an autumn fallow, by which the soil is exposed to the mellowing influences of winter, is invariably followed by a heavy growth of ragwort upon all lands of a tolerable degree of fertility; while a spring fallow of the same lands will produce a much smaller cross of this weed. When the soil has become more close and compact, the ragwort is succeeded by a like heavy growth of stickwort. These circumstances point out the fact that such lands contain plentifully the chemical ingredients fitted for the support of both these weeds, and that the prevalence of either depends upon mere mechanical conditions; the same land, in one condition, abounding in one weed, which, in another condition, abounds in the other.

The fact that a parcel of ground is "drowned," that is, injured by too much moisture, is instantly apparent to any one, upon an inspection of its vegetation. And this is indicated by the presence of aquatic plants, or such as delight in and require much moisture; or by the unhealthy condition of other plants; or by both these means. There are certain varieties of grasses and weeds as well as shrubs, almost sure to be found on moist, springy lands, in which they flourish luxuriantly and vigorously, the sight of which, were all other objects excluded from the eye, would infallibly convey the impression of the propinquity of the water. Of these, again, there are some such as bulrushes, flags, etc., which not only require a considerable degree of moisture, but also seem to demand, though of this I do not speak positively, that the water should be in a measure stagnant. On the other hand, experience leads us to expect that spots peculiarly dry and devoid of moisture, will be clothed with a peculiar vegetation; certainly none of the aquatic plants will be found to flourish in such situations. Modern inquiry has led to much curious speculation in reference to the habits both of animals and plants, and the general truth has been arrived at, that these may be changed only to a certain extent; their powers of accommodating themselves to other circumstances and habits than those in which nature has fixed them, being limited. Plants, when considered only in reference to their connection with soils, climatal influences being passed by, possess these powers in very different degrees; some of them spreading themselves

over a variety of soils; always, however, with some variableness as to vigor, perhaps, and subject to, and in dependence upon, certain creditors. An inquiry into the conditions upon which some of our more common weeds and grasses depend for their existence and vigorous growth, would prove very interesting.

In some regions, as the more mountainous, exposure exerts a very powerful influence upon the character of vegetation. Some plants delight in the shadows of a northern exposure. I have never met with monkshood, growing wild, save on steep northern hill-sides. My observations, however, have been confined to this particular region, the general inclination of which is to the north-east, and where the bluffs and escarpments, or sudden terminations of hills and the steeper declivities, for the most part, look to the north; and were, indeed, except upon such occasional bluffs, etc., too steep for cultivation, exposure appears but slightly to affect general vegetation, either as to character or vigor; for nothing is more common than to see our ordinary field-crops growing as luxuriantly upon northern exposures, as elsewhere.

The texture, that is the coarseness or fineness of a soil, depends upon its exposure or position and upon its geology, that is, upon the kind of rocks from which it is derived. It is noticeable as a general fact, that coarse soils are best adapted to coarse herbage.

Upon the whole, we may safely set down this fact, which our experienced farmer, while examining a field, as first above stated, has not failed to consider, though he may never have had it distinctly expressed before his mind, in so many words, viz.: That the vegetable productions of a soil truly indicate, not only its degree of fertility, but its chemical qualities and capabilities, and its mechanical conditions and peculiarities. What we need is skill rightly to interpret their indications.

A difficulty which, in the consideration of this subject, presents itself at the outset to our enquiries, arises from the effect of climatal influences; that is, from the apparent confusion and interminglement of the botanical provinces of various kinds of plants. But as a general fact it may be assumed, that the absence of one plant in any locality, may be supplied by another, or others, depending upon like causes and serving the same purposes.

Other difficulties spring from what appear to be anomalous freaks in the vegetable kingdom. Certain weeds, like the army worm, or the locusts of the East, occasionally overrun our lands for a time, then disappear and scarcely leave a representative behind. To what cause is their temporary prevalence to be attributed, and their sudden cessation? There is a parcel of sandy Appomattox flat land; the sand deep, and siliceous, but fine and lamellar; which, about eight years ago, was turned up with the double plough. A crop of corn was cultivated, and after the corn a crop of oats. With the oats appeared many thistles of the common variety, and during the ensuing season, and for several successive seasons, the land was literally covered with this weed. It has since been cultivated again in corn and oats and plowed as before, though not with the same results; for now, after two years of rest, except that it has been grazed closely, only a few thistles are left. Other weeds, the same which prevailed there before the first deep plowing, have again taken possession, the most noticeable of which are cowhage, red horse-mint and life everlasting.

Among the difficulties which meet us in such enquiries, are those which arise from the interference of stock, of insects, severe winters, and the diseases of plants by which they are sometimes exterminated. These causes, one or more, may and constantly do promote the increase of one class of plants at the expense of others. Another difficulty comes from the different degrees of hardihood of various plants. A soil for example, may be suited to three different plants, but in different degrees: thus it may be better adapted to the first than to the second, and again better suited to the second than to the third; yet the second may be hardier than the first, and the third more hardy still, and this to such an extent as to enable it to contend successfully with the others. And to this cause, united with the depredations of animals, who alway prefer the tender and more delicate kinds, is to be attributed the fact that many of our lands abound almost exclusively with the hardier and more unsavory herbs, which are in reality better adapted to the growth of others. Another trouble, one common to all human enquiries, is found to proceed from our proneness to be misled by our peculiar *notions* into false conclusions; to have facts distorted, however earnest and honest we may be in our desire to arrive at the truth by some idiocratical vagary. But with all the difficulties which beset us, is it not highly probable, as was before suggested,—nay, is it not certain, that by a combination of effort—by a careful comparison and systematic arrangement of the observations of different individuals in this interesting field of enquiry, very much useful information might be acquired, and many highly valuable facts collected and brought into use? M.

For the Southern Planter.

The Horse.

The seasons for breeding this noble animal is at hand, which makes a few remarks on that subject pertinent. Since the extensive breeding of mules has commenced in the West, and the price of grain has ranged so high in the East, the price of horses and mules has gone up to an almost ruinous rate,

especially when they are subjected to the abuse of negroes and overseers, who regard the killing of a mule and the crippling of a horse as small events, which a forgiving master ought not to talk about; all of which is so much money lost to the owner,—and more than that, their places must be supplied. If we go to raising mules, every mare we put exclusive to the rearing of that animal, is as respects any other breeding purposes, as if she were gelded; and the stock ceases, in as much as the hybrid progeny are incapable of reproduction, and with them, therefore, ends the race.

That something must be done to increase the stock of horses is evident. In this section of Virginia, it is next to impossible to purchase a good horse raised among us. Not because we cannot raise fine horses, but because the few raised are for private use alone, and when good, cannot be bought unless we pay a very large price; and in some cases, even the offer of a large price often fails to get the horse. Consequently the Richmond horse and mule traders grow rich by selling us their stock, which we are obliged to have.

As a remedy for the evil, each farmer must keep one or more good mares, and breed his own stock, of this as of other kinds of animals. When the mares become old, or get injured, then breed mules from them; but always allow the mare to breed a few horse colts first, so as to keep up the stock.

Mules are only *necessary* for the most rough and injurious work; horses and oxen suit best for other kinds. In fact, a well-appointed farm requires horses, mules, and oxen. A farmer who purchased all his oxen, would be thought a bad manager; so ought a man who has to purchase his horses. Mules may be bought, but where farmers are so circumstanced as to raise them advantageously, they should do so. The introduction of the mule and ox into an essay on the horse, is unavoidable. They are naturally related, and all co-labourers and essentials in plantation service, and are thus necessarily brought in.

To return to the horse. Which are the best stocks to breed from, and what the best modes of raising? On these two points, many and various are the opinions entertained and expressed. For the section from which I write, the blood-horse stands first. For all elegant and ornamental purposes he is pre-eminent, and as a farm animal, in good hands, is equal to a mule. The blood-horse is almost unniversally bred in *this* entire section. So long have they been considered the animal for us, that the stock, in many instances, is becoming too delicate, and has, indeed, already grown so. They have not neck and shoulder sufficient for heavy work. This defect may be overcome by breeding on the Morgan and coach-horse stocks, so as to grow animals with more fore-hand, as the blood-horse is apt to be "light in front." For myself, I esteem the coach-horse as the best cross. He has more crest, more barrel, than the Morgan, which has a *pony* tendency, and in age falls down; as is evident from the want of withers. The neck of the Morgan rises, as it were, from his back. Moreover, he is of a Northern race of animals, and his coat of hair and his blood are too thick, his barrel too round, and his ribs too short. He does not "blow out" long enough. Also he has too much crest, which, in hot weather and in rapid action, would produce vertigo. Yet a judicious crossing of this stock on our "nags," or native stock, gives a "smart horse." The few opportunities offered us for crossing on the Cleveland Bay, have been successful,—and some fine horses of that stock crossed with the thoroughbred are to be seen amongst us. The number as yet, however, is quite limited. In the "Piedmont" section, they are becoming quite numerous.

Our most popular stocks just now, are the descendants of Boston, Imported Trustee, and the Boulware Arabian (shaheen.) These are crossed on the descendants of Diomede, Ratler, Gohanna, Tom Taugh, &c., and are used alike for the saddle, the carriage and the plow. The *legs* and the *loins* are the requisites for our soft soil. Where *they* are right in these particulars the horse is apt to be a good one, though, as mentioned above, the shoulder is deficient and the neck too small.

Gentlemen would do well in breeding, not to keep more brood mares than they can keep well, and never to breed horses from one defective in the eyes or feet; (such should breed mules.) A stock of horses that is remarkable for gentleness is best, provided this gentleness does not arise from indifference. Although any animals taken in time and properly handled, will work,—which means, when they are *weaned*, have them haltered and gentled, and every winter of their lives (when they are obliged to be sheltered) have this process of handling and gentling kept up, so that when mature the colt is broken,—or, in other words, his education is complete.

The ordinary mode of colt-breaking, is breaking in earnest. A strong, healthy, vigorous colt is put into the hands of a large negro to break. He and a sand-bag, and afterwards a road-wagon, are the implements of torture; having gone through which he is generally injured, dulled for life, and considered a thoroughly broken animal.

After the breaking, comes the shoeing, one of which methods is, to cut off as much of the frog as possible, trim out the sole of the foot, drive the nails as high as possible, then gash in and rasp down the hoof, until a "neat job" is "turned off," and the horse sent home as being "well shod." All of which I dissent from. If the frog was of no use, nature would not have put it under the foot of

the horse. If the sole should be thin, nature would not have made it thick, and as the lower part of the hoof is thick and the upper part thin, the lower part is the one for the nails to be driven through and clinched *on*, not *in*, as is the case when the hoof is gashed by the rasp.

The best mode of shoeing is, *never to touch* the *frog* with shoe or knife. Put on a wide shoe, fitted smoothly to the *outer rim* of the foot, leaving the sole untouched. Then drive through the nails, so that they come out three quarters of an inch from the ground, clinch them down on the *smooth* hoof, then brush the rasp over parallel with the hoof; and, finally, rasp around the extreme lower edge of the hoof, so as to make all even with the shoe. In doing this, as little of the *rim* of the hoof should be pared as possible. The shoe should not remain on more than from six weeks to two months,—and a few days interval should be allowed between that and the re-shoeing.

During the winter and spring, horses should go without shoes as much as possible. The earth is then wet, and the hoof toughens. The summer is unfavourable; the earth is dry, and the numerous flies and insects occasion a great deal of stamping, which breaks the hoof.

Horses which are shod as above indicated, are not apt to have either narrow heels or corns, or any of the numerous diseases the horse is subject to from bad shoeing. Most blacksmiths will tell you they "won't turn their backs on any one when a horse is to be shod." Still they will lame your horse. Some are very much offended at your presuming to have your own horse shod except as *they* choose. Never mind that; they expect *you* to pay as they choose. Well, if you do that, have the work done as *you* choose—which is nothing but fair.

The bearing-rein is a source of injury also. I do not advocate an entire abolition of the bearing-rein, except on very elegant forehanded horses, but do advocate a very *gentle* use of it; just enough to keep the animal from lounging his head about, and from browsing. Many who have animals with light thin necks, and small heads, which would of themselves carry heads up enough—run them up until the plane of their fall is almost horizontal, and the sun shines perpendicularly on their brain. This they consider stylish, and pronounce an animal whose tail is cut off and turned up, foretop cut out, and head thrown back, until he is the reverse of nature, a "showy, commanding" animal. Whenever I see a horse with his tail off, I feel assured he was an ungainly animal thus "put up" to get a sale. The only use for the knife with a horse is to *geld*, which is best from one to two years old, though, it may be done until almost any age, with care. Two gives more cost than one; at three sometimes they become spiteful, though it is a safe age.

When the colt is thoroughly mature, he will render much service if raised and broken with care and judgment. There is scarcely any work that, in skilful hands, he will not perform. The most fretful should be kept for light, quick work; and most patient for that which is heavy and tedious. To have good, easy running wagons and carts, and not allow them to be overloaded, which is a gain for a few hours or days, and then the animals cannot do as much as was natural, and frequently none at all, being permanently injured. By working them to easy running vehicles, with good harness and a sensible driver, one's riding horse may be worked without injury, and sometimes with decided benefit.

All negroes will rein up horses to an absurd height, merely because they admire what is ridiculous, and prefer what is wrong. The master, therefore, should keep an eye to these things, so as to correct all such improprieties as the one above referred to, the excessive use of the whip, bad fitting collars, short backbands, traces so short that the swingle tree bruises the hocks, &c. When the horse comes in from use, have a small lot for him to be turned in, to wallow and rub for a few moments, when he will return to the stable of himself. This will keep him from rubbing when under the saddle or in harness, and from laying down when tied out. A roomy, clean stall and good bed of straw, add much to his comfort. These may appear small matters to write about, but in reality are of moment. Some *good* farmers say, they have not the "horse bump." Well! considering the *bumps* we give the horse, it is well to have such a talent. Farmers who have no talent for horses, and overseers who have none, should make a study of them, as of any other branch of agriculture. In fact, I will keep no man in my employment who *can't* keep a fat team. You had as well employ a man who could not cultivate your crop, as one who cannot keep the *means* of cultivating it in a condition to work.

The *bit* is another thing requiring attention. For the bridle to be worked so short as to draw the mouth up, or the check-rein to be so drawn as to saw the mouth, and cut it back or sidewards larger than the natural size, is a thing no horse ever recovers from. The saliva is always oozing out; he can't drink with ease; his lips hang,—and altogether, the horse is a deformity. I have seen careful, attentive farmers, with horses over twenty years old, which they raised themselves, that were still efficient animals.

The attempt of farmers to raise race horses, unless they are men of wealth, is injudicious; but I certainly hold the raising of the horse as essential as that of any other domestic animal, and recommend all farmers to attend to

them. Where the matter is understood, the raising of horses is not as expensive as is believed. The cost and trouble are inconsiderable, in comparison to their benefit. What we are paid in dollars and cents is not half of the profit of this animal. In all the phases of life we see the horse the help and companion of man. "In peace and in war, he is first in the hearts of his countrymen." In pleasure and in pain we want him; in wealth and in poverty we use him. The first thing which strikes our boyish fancy, before our hearts are attuned to love, is the horse. When in love, our first want is, like "Lord Marmion," to be mounted on a "prancing roan;" and after death the horse pulls us to our grave—or, in other words, "when some proud son of man returns to earth," the neighing of steeds and tramp of men always are among the requiem for the dead. And, indeed, if "Stern" is to be believed, *before our births, horses are sometimes in demand.* So, raise the horse.

TIDE-WATER FARMER.

For the Southern Planter.

Peabody Corn.

ISLE OF WIGHT County,
Jan. 24th, 1859.

EDITORS SO. PLANTER:

Gentlemen.—For a month or two past, I have been on the eve of writing you, to give you the particulars, culture, and yield of a small ear of Peabody's Prolific Corn, presented to me by one of you last winter in your office, from a stalk of corn sent to you by Charles A. Peabody, Esq., of Georgia.

After receiving that ear from you, I became anxious to obtain a little more of it; so I wrote on immediately to Mr. Peabody, enclosing him two dollars, and soon received by mail about three gils of his, the same variety of corn.

At the proper time, say about the 25th of April, in an off field, which had been in cultivation yearly for many years, I had a small plat of land, sufficient to plant this corn, fallowed up with a single-turn plow, then streaked off four and a half feet, and ridged up, crossed deep four feet across the ridges; one table-spoonful of Peruvian Guano applied to each hill, a little dirt thrown over the Guano, and one grain of corn dropped in the check over the Guano, and covered lightly, (1709 hills in all.)

It came up finely, but the Guano being too near the grain of corn in the hill, I suppose, caused several hills to wither and dry up. The birds and moles, too, came in for their share, and finally, I only had 1306 bearing or standing hills. I replanted the missing hills afterwards, first in peanuts, then in black peas.

In good time I had this corn plowed and hoed; and in time, again, I had it plowed, (growing finely;) and I intended to have plowed and hilled up early, but, alas! alas!! the drought, such as I never before have seen since I have been farming these twenty-eight years, came upon us, and for some time I waited and waited, until I finally concluded it would make nothing as it was, and it could do no more if I worked it and the drought should continue. I therefore had it plowed and hilled up. I did not go in it for some time, thinking I should get nothing from this trial, as crops of corn were considered cut short nearly one half.

Well, about gathering corn time, as I was about to leave home for the day, I thought of this corn, so I directed one of my men to go over to the field, pull it down, take a cart and haul it home,—observing to him that I reckoned he could bring it in the cart at one load. On reaching home at night, I asked my man, "What success?" and he stated that he had hauled up four good loads of this corn, instead of one, as I thought.

Next morning it was nicely shucked out, and I made some little over four barrels of good nice white corn.

Now, Messrs. Editors, in consideration of the excessive drought, and only common culture, and about eighty pounds of Guano in the whole plat of land, and the pea hills receiving 403 spoonfuls of Guano out of the eighty pounds, I do regard this as an excellent yield, indeed. The product of corn in a very dry season indeed, on common land, being five bushels for each 325 hills!

This corn resembles our common variety of white corn in looks, but in growing, soon after being up, shoots out suckers, or tillers, near or at the ground, as many as three, I have seen, to the stalk, each of which grows up luxuriantly with the parent stalk, and all are very prolific in their bearing, the ears are of a medium size and of the usual lengths. from twelve to sixteen rows; and I speak within bounds when I say it will yield fifty per cent. more corn to the hill than our common variety will; and it is not of the sleek variety of corn either.

So well pleased am I with it, that I shall plant several acres in this corn the present year,—away from any other corn, that it may not mix with my other common corn.

I am in hopes (seasons suiting) to let you hear a good account of my better success next fall; for I do think I can raise fifteen or eighteen barrels of this corn per acre, from improved lands as well as Mr. Peabody, whose crop per acre was ninety-two and one-fourth bushels of shelled corn, and twenty-five acres in cultivation, as will be seen in his circular. My lands are poor, but there is nothing like TRYING.

Excuse me for this lengthy note, as I had not designed being so lengthy when I set down to write. Probably you may be able to find a corner in your paper where you can dispose of this without much inconvenience.

Yours truly,

A. G. MOODY.

For the Southern Planter.

Fish as Manure for Corn.

WICOMICO CHURCH Va., February 19th, 1859.

In answer to the request that some subscriber who has had experience in using fish as a manure would give his mode of using them, I will say, that in this part of the county of Northumberland we have used fish for several years, and by some of the farmers living immediately on the water, very extensively. Our usual plan when caught in the fall, is to run off a furrow, and drop the fish (alewife is the kind we use, which is about the size of herring,) about one foot apart, and lap the land over them by throwing two furrows; and let it remain until spring for corn.

When we use them for wheat, we drop and cover in the same way, only have the rows about two feet apart. The oil from the fish will extend entirely over that surface. When we use them in spring for corn, we drop in a furrow about a foot from the corn, sometimes in the middle of the row; in this way the corn receives no benefit until it gets large. We never catch them until our corn is planted.

Had I the fish now as Mr. Graves has, and could keep the dogs from pulling up the corn, I would drop and bed on them as in the fall.

Very respectfully,

E. BROWN.

From the Maine Farmer.

Board of Agriculture.

EVENING CHAT.

TUESDAY, January 26th.

The subject for consideration was "*Stock of all kinds.*"

Dr. True, of Oxford, said, I wish to occupy but a few moments; but I wish to put in a plea for our "natives." I think justice has not been done their merits by our breeders of fancy stock. I stand here to challenge all the growers of improved breeds to produce anything equal to our good old natives for milk. Where is any of your improved foreign stock, among which are found cows that will give milk the year round? Can you produce a cow that will give from thirty-five to forty-two pounds of milk per day? If you can I would like to see her.

And then, in regard to oxen—what is there equal to our old natives? You may get larger animals; but are they capable of doing the amount of work that our natives are? Are they as powerful for their inches, as hard and tough, and as capable of endurance? Most splendid stock is produced from our natives, by those who take good care of their animals. I would like to have our fancy breeders produce stock equal to some of those I have seen. I would submit whether the introduction of improved stock has not been a curse to this country, instead of a blessing.

Mr. Flint, of West Somerset, said, I have seen a full display of our native stock before to-day, and I must say, I do not think the introduction of improved stock has been a curse to this country, notwithstanding the wretched manner of breeding. Look at the facts. It is within my recollection that it was hard work to get a yoke of oxen that would girt six feet and four inches—harder than it is now to get those which will girt eight feet and six inches. Look at the stock exhibited at our shows, and what a change has been effected! Two years old stock, formerly, was not so large as our calves now are.

I have lately seen an exhibition of the genuine old native stock. Some speculators from my neighborhood went to Canada this fall and bought a drove of genuine natives, and the herd looked more like a herd of goats than neat stock. And the oxen ought to have been seen by my friend from Oxford, to have ample justice done them.

THURSDAY, January 27th.

The subject for discussion was the renewal of the debate on "*stock of all kinds,*" which was broken off on Tuesday evening to give place to the business of the Maine State Society.

Mr. Flint, of West Somerset said, I do not propose to discuss stock of all kinds. I am sometimes called "sheepish," as my friend here at my left is called "piggish." Not that we are particularly distinguished for the qualities these terms are sometimes used to indicate, but on account of the attention we give to these kinds of stock. It is true, I am particularly interested in sheep. They are my favorite stock. But I cannot do so much in this line as I would like, for the want of more pasture.

I am a little disposed to find fault with the action of the State Society in relation to this kind of stock. The premiums offered on stock is altogether disproportionate to the relative value of each. One hundred and forty-odd dollars are offered on premiums in Ayrshires alone, and only forty dollars on sheep of all kinds. This does not seem to be equal. As for Ayreshires, I never saw one in my life, and know nothing as to their value, relative or otherwise; but the value of sheep I do understand something about, and I regard these as

the most profitable stock we can raise. I think sheep husbandry needs and deserves to be encouraged.

The fact is, as every one knows who is at all conversant with the subject, we do not raise wool enough to supply our home demand. We produce only about *one-third* of what we consume. There has been a decline in production in New England, for a series of years, till within a few years. We are now gaining, and this branch of husbandry needs to be encouraged, on account of the discouragements to which it is subjected. It is subject to more sudden depressions and fluctuations than any other description of stock, and hence farmers are more disposed to abandon it, as so many have done. But with all its fluctuations, I think, take a series of years together, no description of stock is so profitable as sheep, and no branch of farming so profitable as sheep-husbandry.

Perhaps I am not so good a judge in this matter as some others; for my experience has not been so varied. I was not bred a farmer from a boy, as some others have been. I entered into it, after attaining my majority, from choice. Farming is my chosen profession, and I chose sheep-husbandry as my leading business, and have always stuck to it, so that my experience in other departments is very limited, and my judgment is made up mostly from a complication of my neighbors and my own results.

To enable you to form a judgment as to the profitableness of this branch of this farming, I will give a statement from my books, of my last year's operations. The following are the facts and results:

Jan. 1, 1857.	Dr.	
To 250 sheep, $4 per head,	$1000	
To 45 tons of hay, $8 per ton,	360	
To 40 bushels of provender,	15	
To use of pastures,	25	
To shearing, twine, salt, &c.,	30	
		$1430
Sheep.—Jan. 1, 1858, (same time,)	Cr.	
By wool sold, 1000 pounds,	$470	
By lambs sold,	90	
By store sheep to Brown and Morse,	73	
By grade French buck sold,	120	
By Spanish bucks sold,	375	
By use of buck on hire,	50	
By mutton, sheep and pelts,	14	
	$1192	
Flock now worth,	1000	
		2192
Nett profit,		$762

Now I would like to see the farmer who can produce any other stock that pays as well as this. The fleeces brought almost two dollars a head. But this is not only a profitable business for the farmer, but it is an important interest to the country. Still I would not make sheep-husbandry an exclusive interest; but I think men having farms adapted to this branch of business, would find their interests promoted by making it a leading thing and all else subordinate. In most cases I think it best to grow different kinds of stock. But horses I dislike. I dislike them so much that I can almost any time go out of my way to kick a horse. They are only a bill of expense. There is no profit in raising them, They are of too little real value, to be esteemed as highly as they are. Too many are kept and too many are raised. They eat themselves up three or four times before they are old enough to be of any service. I think the most of them had better be knocked in the head, and the hay they would eat fed to sheep, when it will pay.

I know there is a great deal of fluctuation in the price of wool; but experience fully demonstrates that depression below the remunerative profit does not continue longer than from two to four years. Wool does not lose in value from age, and of course, when the price is down there is no necessity for selling. Four years is the longest it has ever had to be kept, before prices become remunerative. Usually it has to be kept only one or two years. I have never sold at a loss. When the price is down, I pack my clip in sacks and pack it away in a suitable place, and there let it remain until prices comes up to the remunerative point.

I feed my sheep in racks prepared for them. I give them but little provender—only waste beans, peas and oats. This I think better than corn. I let them have free access to good shelter and a plenty of water. I lose only about four per cent. of my flock in a year from all causes. More of these I lose in the summer than in the winter. A part of this is in the disappearance occasionally, from my pasture, of a good fat sheep, that goes, one can hardly say how or where.

I use my sheep manure in the spring. I usually plough up about five acres every fall, of grass land. I aim to turn up an inch of the subsoil that has never before been disturbed by the plough. In the spring I spread on from eight to ten cart loads of sheep manure to the acre, before the snow goes off. After the snow goes off I knock the lumps in pieces and scatter them over the ground. When the frost is out, I plough it in with a small plough or work it in with an ox cultivator, without disturbing the turf. I then manure in the hill with a compost, and cover it with a hoe. In this way I get the best crop of corn.

Mr. Tucker, of Waldo, said, the gentleman last up seems to think that the building of railroads has reduced the price of horses, and made them almost worthless. The directly reverse of this is the fact, as I believe. Prices have never ruled so high, as since the con-

struction of lines of railroads. On every line of railroad in New England, more horses are owned and raised, than in old stage times. In every little village is a livery stable containing more horses than the stage line which supplied it with the mails, and when such a thing as such a stable was never dreamed of. Beside there are quite as many horses owned among its citizens as before the construction of the railroad. It is true that a better class of horses is demanded, and those who breed miserable animals realize miserable profit, if they do not find it impossible to sell at any price. I confess I like a good horse, and my experience is, that a good profit can be and is realized on raising good horses.

Dr. Dill, of Franklin, said, I have no knowledge of the breeding of sheep and horses; but I have had some experience in raising neat stock. I know neat stock can be raised at a profit, even at present prices. I will give some figures to illustrate this, from my own experience.

In the fall of 1856, I took a pair of two year old steers on a poor debt, at fifty dollars. My account stands in this wise:—

Cost of steers	$50 00
Keeping one year I paid	16 00
Cost of steers the next fall,	$66 00

Could have sold them for $90 00, but preferred to keep them another year. Had I sold them they would have afforded me a profit of twenty-four dollars for the year's risk and interest, which is a pretty fair per centage on the investment. A business of this character is better than money invested in stocks or merchandize. And this is only one of many instances in my experience, that I might name; for I have tried it on stock of different ages—calves, yearlings, two and three year olds, all with the same general results.

There was a widow in my neighborhood who had a farm worth $550. This was the price for which it would sell. She was offered this sum for it, but I advised her not to sell; but to lease it for one-half the products, and occupy the house herself. She followed the advice, and the result was as follows, for her share of the produce:

8 tons of hay, $6	$48 00
20 bush. corn, $1,	20 00
20 " oats and peas, 50c.,	10 00
30 " potatoes, 33⅓c.,	10 00
Sold apples to the amount of,	10 00
Received for pasturing stock,	16 00
Miscellaneous receipts,	20 00
Whole income,	$134 00

This is an income of 26 per cent., beside which she had the benefit of pasturing for a cow, the income of a small garden, poultry, bees and other small items.

These facts demonstrate, that both stock raising and general farming can be made profitable. How much better was it for this woman to keep her farm and cultivate it with other hands, than to have sold it and invested the money at interest.

Mr. Thissell, of Penobscot. I would ask if any one can attend exclusively to sheep raising, raising of horses, or any one kind of stock or crops, with the highest pecuniary results. My opinion is, that the better way is, for each farmer to attend to all the varieties of farming and stock raising. Then, if one fails, another may be successful, and thus compensate him for his losses. I think the true policy is to encourage every species of farming and every kind of improved stock. In this way we may be able to determine ultimately what description is best adapted to different localities.

Mr. Martin, of Androscoggin, said, I have listened with great pleasure to the remarks that have been made on the subject of stock raising, and particularly of sheep husbandry, which I conceive to be a great and growing interest. But there is one interest that has not been attended to, to which I wish to call attention. I mean of pork. I wish to do this, because it may be said by men who listen to what is here said or who may read this report of our sayings or doings: "Oh, this is all very well for men who have capital. If we only had the money to begin with, we could do something at farming; but as we are poor we cannot succeed."

I know something of the embarrassments which the poor man feels; the many and restless hours of the night-watches he spends in looking his embarrassments in the face, and devising how he may better his condition. I know there is many a man, honest but poor, in the present depression of business, who asks himself in agony and tears, what shall I set myself about, not to obtain riches, but to obtain a livelihood for myself and little ones?

My deep sympathy for such men, leads me to desire to suggest something and to do something for their encouragement and help. I began as a farmer, with a wife and child, and involved in debt in consequence of engaging in the lumbering business and lending my name as security for others. I have succeeded by my farming, in paying my debts, and at the same time have enjoyed farming and secured its delights and its rewards. My own experience makes me wish that every poor man could be encouraged to engage in and faithfully follow this pursuit, for it is the surest pay of any employment in which man can engage.

My plan of operations to start a poor man in business, is this: I would furnish him a capital of sixty-dollars. If he has need of such aid, let his friends and neighbors loan him that amount. Having obtained the funds,

let them be invested in eight pigs, and the balance in corn. Let him put his pigs in a yard with a roof of poles, scantlings or other cheap material over it, and thatch it, to keep it dry. Let him spread over the yard a coating of a few inches in depth, of muck, loam, scrapings from the road or the chip-yard, and let an additional supply be added every week. Here let the pigs be fed with meal from his corn, till it is all consumed. Let him then kill one of the pigs, and with it purchase more corn with which to feed the remaining seven, till it is consumed, when he shall kill another pig and put it into corn; and so on till but four shall remain, which, if they have done at all well, will make, after eating up the fourth one, one thousand pounds of pork, and manure sufficient to manure one acre of corn in the best manner. This pork will pay for for his capital, and the interest and expenses, and leave him a small margin in cash, beside his manure which will amply compensate him for all his trouble. This manure will give him corn enough to commence the same business another year; and he can go on, increasing his profits and adding to his means. This experiment I have tried, and so have others, and all have been successful.

Mr. Leadbetter, of Somerset, said that he was a friend of the horse, and he thought that too many horses of poor quality were kept. What we most need, since men will keep and love horses, is, that they be good horses. In answer to a question, he said that generally it takes about three colts to get one good horse, according to his observation, although his own personal experience was more favorable, having come early into a good breed of horses.

Mr. Anderson of Cumberland, thought that take the pastures in the State as they are, and the short summer the Devons were the best. He allowed to Durham short horn cattle superior size and early maturity, but they are soft hoofed, loosely made, silky but thin haired compared with many other breeds; in fact, he believed them to be as tender as any breed except the Jerseys. To the Hereford he allowed superior size and perfect integrity of action.

If we can find a breed of cows of fair qualities, which will impart these to their offspring, we do the best. The Devons do this more uniformly than others. The Herefords require a higher growth of feed than the Devons, and are not so good milkers.

The introduction of the Durham breed into Maine he could not regard favorably. They were large and occasionally good milkers, but they cannot be relied upon for their integrity in imparting good milking qualities to their offspring. There is a great want of uniformity in this respect. Every farmer must adapt his breed to the condition of his locality.

An axiom of breeding is received in England, and prevails among the more intelligent breeders in the United States, that in stocking a farm with neat stock, regard should be had to the breed of cattle which had been native to the place; for if this principle was not regarded, the stock, if too large, would inevitably come back to that size, and on the other hand, those too small would increase in size until they came up to the size of the natives, and there is this advantage accruing to those which are too small that they increase, particularly in muscle, while those too large decrease in muscle and retain their large bones, and after this decrease their ungainly, disproportioned joints.

Mr. Goodale of Saco, spoke of the various breeds which he had noticed in his visits to New Brunswick and various parts of the State. There is everywhere an increased attention to this subject of the breed of cattle, and a great improvement is going on.

He referred to one matter which may by and by come to be of great importance when we send to market much larger number of cattle than we have been doing in the past, and that is the fact, suggested by chemistry, that in producing a pound of fat meat, there is less exhaustion to the soil than in producing a pound of lean meat. Fat meat does not draw the phosphates from the soil in the same proportion as lean meat, and yet lean meat sells for less than fat meat.

He called the attention of the Board to the importance of veterinary science. In Scotland the death by diseases in cattle had diminished one half since the introduction of this science into that country.—*Maine Farmer.*

A Short Account of Short-Horned Cattle.

As it may prove interesting to some of those into whose hands this catalogue may fall, and can scarcely be out of place, I will venture to give a short account of Short-Horned Cattle, confining myself to those authorities who are considered most reliable, treating the subject in as short a space as possible.

Youatt, who quotes from the Rev. H. Berry, is the chief author usually referred to on the subject of this far-famed breed of cattle, which some are disposed to divide into two varieties, on account of their different properties—the one more profitable for the dairy, yielding a large quantity of milk and butter; the other, which they call "the improved Short-Horns," peculiarly adapted to grazing and feeding. The Yorkshire cow, so popular with all dairy-men, both in the north of England and London, may be said to represent one variety; the

animals carrying off all the prizes at the great agricultural shows represent the other. How far the two varieties may differ from one another, I have not space here fully to discuss. I am disposed, however, to believe that the transition from the one to the other variety may be made by following a proper system of crossing and treatment, or that the produce of the Yorkshire cow, might, by a few judicious crosses and proper management, be brought to represent the improved Short-Horn, and that the latter, with no better treatment than is usually given to the Yorkshire cow, and due attention to the milking properties, might, after a few generations, be readily taken for her more humble relative.

Yorkshire and Durhamare, without doubt, the native counties of the Short-Horns—the country along the banks of the Tees (which river divides these two counties) being at a very early period, noted for its cattle.

Whether the stock throughout that district was, in the first instance, improved by attention to the native breed of animals, by crossing the best cows with the best bulls, or by crossing with other stock, is a question which has not been settled beyond a doubt; it seems, however, to be the opinion of those best acquainted with the subject, that an improvement was brought about by the introduction of some animals from Holland by Sir William St. Quintain, of Scampston, Yorkshire, which were crossed with the native breed, causing the first great improvement, prior to that made by Mr. C. Colling, who brought Short Horn to a very high state of improvement, if not to perfection, as some would have us believe.

Proceeding on the principle that perfect symmetry is most rarely found in large animals, and that this was a great object to be obtained by a breeder, since in it you have one of the best proofs of thrift, early maturity, and fattening qualities, Mr. Charles Colling seems to have determined upon reducing somewhat the size of his animals, giving special attention, at the same time, to shape and quality; with this view he is said to have used the bull Hubback, calved in the year 1777; also, to have tried a cross with a Galloway cow. Hubback, though only used for a short time, seems to have been of much service. How far the cross with the Galloway advanced his object, is not so easy to say. The grand-dam of Bolingbroke being one-quarter Galloway, is the only bull of this blood known to have been used. By crossing him upon his old cow, Phœnix, Mr. Colling had Lady, which, from the prices realized at his sale, must have been, herself, a fine animal as well as a good breeder. It must be remembered, however, that Phœnix was the dam of Favourite, as well as Lady, and the excellence of the blood on that side being undoubted. Mr. Youatt says, "as the grandson of Bolingbroke is not known to have been the sire of any other fine animals, it is most probable that the unquestionable merits of Lady and her descendants are to be attributed more to her dam than to her sire."

The value put upon Mr. C. Colling's improvement by the breeders of his own time, may be estimated from the statement (given in Youatt's book) of his sale in 1810, where we find that

17 cows sold for	£2802	9. av'age,	£164 17 0
11 bulls sold for	£2361	9. av'age,	£214 13 6
7 heifers sold for	£ 942	18. av'age,	£134 8 3
5 heifer calves sold for	£ 321	6. av'age,	£ 64 5 2
47 produced	£7115	17. av. pr. hd.,	£151 8 0

Which, reduced to U. S. currency, will equal about $732 75 per head.

Though Mr. Charles Colling has more reputation than any other breeder of Short Horns, his brother, Robert Colling, Messrs. Charge, Coats, Mason, Maynard, and many others, were at the same time breeding with success, as a statement of the prices obtained at some of their sales might prove; for, though not so high as those obtained at Mr. C. Colling's sale, it must be borne in mind that the first took place when every thing was high, the last during times of depression. At Mr. R. Colling's sale, in 1818:

34 cows sold for	£4348	3. av'ge,	£127 17 8
17 heifers sold for	1351	7. av'ge,	79 9 9
6 bulls sold for	1410	3. av'ge,	235 0 6
4 bull calves sold for	748	13. av'ge,	187 3 3
61 head sold for	£7894	4. av'g. per head	£129 10 10

Which will make about $613 per head.

The value of Mr. C. Colling's improvement being made public by the eagerness with which other breeders sought to obtain some of his stock, tended to diffuse his blood throughout all the cattle breeding districts, and though, during times of de-

pression amongst those engaged in agricultural pursuits, this stock, like everything else, was much neglected, there were, fortunately, always men of spirit and means sufficiently interested in them to keep them up in their purity. Amongst these may be mentioned some of the immediate successors of Mr. C. Colling—such as Lord Althrop, (the late Earl Spencer,) Messrs. Bates, Booth, Maynard, Whitaker, and many others—and there can be no doubt but that the stock handed down to us by these eminent breeders is fully equal to any which preceded them. As there is no better way of judging of the value put upon anything by the public than by ascertaining what they will give *for it at public sale*, I will only say, that at the sale of the late Earl Spencer, the average of the whole herd, little and big, male and female, was about £68, equal to about $330 per head. At the sale of the stock of the late Mr. Bates, which took place 9th May, 1850, the average was somewhat less. Mr. Bates had six different families of cows—1st, the Duchesses; 2d, the Oxfords; 3d, the Waterloos; 4th, the Cambridge Roses; 5th, the Wild Eyes; 6th, the Foggathorpes.

Duch's av.,	m.&f.,	£116	5 0	pr hd	eq ab	$562 50
Oxf'ds,	"	"	68	16 4	"	"	333 00
Wat'ls,	"	"	59	10 0	"	"	288 00
C. R's.,	"	"	49	0 0	"	"	237 25
W. Ey's,	"	"	48	2 7½	"	"	233 00
Fogg's,	"	"	46	19 0	"	"	227 25
Gen. av. - - - -		67	0 7,	eq'l to ab't		324 50

I have taken notice of these sales for the purpose of showing the estimation in which Short Horns continue to be held; with this view, I shall notice that of the late Lord Dueie, which took place on the 24th August, 1853, and a few others.

At Lord Dueie's sale, there was sold:

49 co's, he'fs & ca's, f'r	£6,867	0 0	c. to	$33,236 25
13 bu's & bu. ca'vs, for	2,494	16 0	"	12,071 00
62 head in all, - - -	9,361	16 0	"	45,307 25
Average, per head, - -	150	19 0	"	730 55

It will be seen that the average price obtained at this sale is within a few shillings of the average obtained at Mr. C. Colling's sale, which considering the number of well bred Short Horns throughout Great Britain at the time, was somewhat astonishing. Lord Dueie had indeed taken much pains to select his stock, and was never prevented by the cost from having what he wished; nevertheless, the prices realized were extraordinary, and could not have been obtained but for the strong competition for Bate's Duchess tribe of animals, (at present most highly esteemed,) carried on, in a great degree, by gentlemen from America, who seemed determined to out-bid the English breeders, as well as one another. One cow brought 700 guineas, equal to $3,500; another brought 600 guineas, equal to $3,000; and others, something less, though all went at high prices.

The next sale, in point of time, is that of Mr. Tanqueray, of Hendon, a gentleman who, though he did not continue long to breed, engaged in it with the utmost spirit, and generally obtained the best stock that could be had, with little regard to price.

This sale came off on 24th April, 1855, when there were sold,

77 cows, heifers, and heifer calves for	£5915 14 0
24 bulls, and bull calves,	1928 17 0
	7844 11 0
Average per head.	77 13 4½

Equal to about $376 00.

The next sale in order was that of Sir Charles Knightly, of Falseley Park, which came off in April, 1856. Sir Charles had been breeding with the strictest attention to the purity of the blood of his herd, for thirty-five years, during which time I believe he had never sold a female fit for breeding from it.

There were sold 48 cows, heifers, and heifer calves for	£3979 10 0,	equal to $18,950.
There were sold 29 bulls, and bull calves for	£2184 0 0,	equal to $10,400
Total 77hds. fr.	£6163 10 0,	equal to $29,350
Average of females,	£82 18 ½,	equal to $39,479
Average of males,	75 6 2½,	equal to 358,62
Average of whole,	80 1 0,	equal to 381,16

I have, hitherto, omitted to give any account of the high prices given in America, for Short Horns, as well as those paid by purchasers at private sale, of which I may here make some mention. At the "Scioto Valley Importing Company's" sale in Ohio, in 1852, there were sold nine bulls for $13,460; highest price $2,510; lowest $450—average per head, $1,495 55. There were sold seven cows for $8,315; highest price, $1,230; lowest $900—average per head, $1,187,85. Sixteen head sold for $21,775—making an average of $1,361 per head.

In the following year, 1853, at the sale of the stock of the Northern Importing Company there were sold

10 bulls for $28,681; highest price, $6,001; lowest, $1,000—average, $2,868 10.
15 cows and heifers, $19,025, highest price $3,050; lowest, $535—average, $1,268,33.

25 head of bulls and cows brought $47,706—making the average price per head $1908,24.

This sale is, without doubt, the highest ever made; but a bull, "Master Butterfly," has been recently sold in England, at private sale, to get to Australia, for about the same price that Diamond, highest priced bull brought at this sale; and though no recent private sale has reached the high figure of $3,500, for which one of the Duchess tribe sold at Lord Ducie's, or $3,050 paid for Mazurks, at the Northern Kentucky Importing Company's sale above mentioned, 500 guineas or $2,500 was confidently looked for, as the selling price of the first prize cow at the Royal English Agricultural Society shows this year, nor would it be surprising that the price was obtained.

It will thus be seen that since the attention of the public was first called to this breed of cattle, they have been constantly advancing in favour, and though, in times of feverish excitement, the prices given for them may, in some instances, have been higher than can be obtained just now, it may be said, that never since their origin have they been more popular than at the present moment. Recommended by their intrinsic merits, the Short Horns have overcome all prejudices, whether of a local or national character.

They have been introduced not only on the continent of Europe, but as we all know, have long since crossed the Atlantic, to this country and Canada, and more recently have been successfully tried in Australia. This, of itself, is sufficient proof of their great merits; but it may be added, that wherever they have been introduced, a decided improvement has been uniformly observed, and it can scarcely be deemed too great praise of this remarkable breed of cattle, to say, that whether for the purpose of crossing other stock, or, (being bred pure,) for the purpose of grazing or feeding, or for the dairy, no known breed can be found to equal them.

R. Aitcheson Alexander.

Cord-Wood Houses.

A new method of building has been suggested, but we are not aware that it has ever been "put in the papers." It is claimed to be equally as good, if not better than the old plan of building frames, while, in all wooden regions, it has the merit of being very economical. Any one possessing timber, or living where it is cheap, can, by this new method of house-building, erect them a neat and comfortable house, with the outlay of very little means. The principal cost is the outlay of labor, which any one with skill enough to build an ordinary board fence is capable of performing.

How to Build.—First saw and split your wood, the same as for the stove, of the same length as you desire your walls to be in thickness. If you want your walls one foot thick, cut your wood twelve inches long; or if eight inches is to be the thickness of the walls, then cut your wood only eight inches long, varying the length of your wood to any desired thickness you wish your walls. After laying your foundation wall in stone or concrete, as for frame dwellings, erect two planks on edge, at the distance apart of the thickness of your wall, and secure them by cross ties. Now proceed to lay in your cord (or stove) wood, putting in a layer of mortar between each layer of wood, so that all the chinks and crevices may be perfectly filled. The mortar will fill all irregularities at the end of the wood, and leave the face of your wall perfectly even and smooth. When you have filled in your wood and mortar to the height of the plank, you can loosen the ties and raise the plank, or slide them along the wall, preparatory to another layer or extension of the wall. At the corners of your building, you will lay every other tier of wood at right angles, the same as you would cord up the end of a pile of wood. When you get your wall to the desired height for the first story, lay across your joist or floor timbers, being careful to get them all level, and proceed as before until you reach the desired height of your house, when proceed to level off your wall, and place planks thereon for the rafters to rest, tying them at the corners. After erecting the end rafters and staying them, you can proceed to lay up the gable the same as your main walls. The door and window-frames of heavy plank can be put in their places as the erection of the wall proceeds. The inside walls can be erected at the same time as the outside, or

afterwards, at the option of the builder. The floors, roofs, etc., will be like unto other houses. Thus erected, the inside walls of the house will be smooth enough to paper, or a coat of plaster will readily adhere to them, if the owner desires. The outside, for a neat and economical cottage residence, need only be whitewashed with a water-proof whitewash, the same as that used on the back part of the President's mansion. If the owner desire it, he can readily clap-board, or put on a hard finish, as may accord with his taste.

Double Walls.—The foregoing is a cheap way of building a good house; but a still better way is to make the walls double, with a dead-air space between. Cut your wood for a double wall, say, six inches long. Lay up two tiers, or walls, side by side, with a hollow space between. To make the walls firm, occasionally tie them together by sticks long enough to reach through this dead-air space by only carrying up cross partitions of wood, the distance apart you desire your chimney, and thoroughly plastered on the inside.

Comfort and Economy.—That such a house should be warm in winter, and cool in the summer, no one can doubt who has paid attention to the manner of its construction. But is it economical? It is capable of being constructed, so far as the walls are concerned, by any skilful common laborer. This is an advantage over the common method of building, as on that skilled mechanics have to be employed, at high wages. The amount of wood required is much less than would at first appear, as any one who makes an estimate will find. Thus, for a small cottage size, sixteen by twenty feet, and one and a half stories high, it will take less than seven cords of four-foot wood. It is considerable labor to cut the wood, but in many cases the labor will not be felt, as it could be done at odd hours, and on rainy days when little else would be done. All expense in the body of the house for nails, laths, etc., would be done away with, and there would be a slight additional expense for mortar, it taking more than by the old method.

In conclusion, we would say, this method of building is capable of being applied to out-houses, and the double wall-plan will make excellent ice-houses, or above-ground cellars, on account of the non-conducting power of the walls.—*Philadelphia Dollar Newspaper.*

The Trade, etc., of Havana in 1858.

From a highly interesting table in a late number of the *Diario de la Marina*, the Savannah *Republican* translates the following items, which will be read with interest by our business men generally:

"There arrived in the port of Havana, for the year 1858, 132 American merchant steamers, against 167 in 1857. Sailed in same time 130, against 165 in 1857.

"The number of passengers arrived from the United States in 1858 was 4,887. The total number of passengers from all points was 31,555.

"The number of vessels touching at the port of Havana in 1858 was 958, of 392,572 tons, against 909 vessels, of 406,873 tons, in 1857. Vessels from all points during the year 1849, of 679,815 tons, against 1,953, of 696,366 tons, in 1857.

"The total exports of Sugar from Havana and Matanzas for the year 1858 was 1,268,150 boxes, against 1,116,696 boxes in 1857; of which to the United States 349,135 boxes, against 302,112 boxes in 1857.

"Total exports of Coffee from Havana in 1858, 20,483 arrobas, (25 lbs.,) against 19,609 arrobas in 1857; of which to the United States 7,734 arrobas, against 31 arrobas in 1857.

"Total exports of Molasses from Havana in 1858, 21,545 hhds., against 30,161 hhds. in 1857; of which 18,765 to the United States, against 23,804 in 1857.

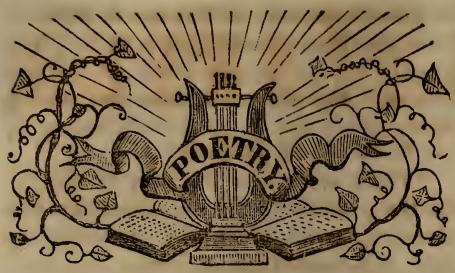
"Total exports of Rum for the year 18,415 pipes, against 14,058 in 1857; of which to the United States 919 pipes, against 250 pipes in 1857.

"Total exports of Cigars 106,231,000, against 146,720 in 1857. Of unmanufactured Tobacco 5,046,896 lbs., against 3,590,135 lbs., 1857.

"Total exports of Honey 1,679 tierces, against 1,640 in 1857; of which to the United States 234 tierces, against 264 tierces in 1857.

"Total exports of Wax 37,016 arrobas, against 49,732 arrobas in 1857; of which to the United States 373 arrobas, against 80 arrobas in 1857.

"Total imports of Rice for the year—from the United States 76,877 quintals, (100 lbs.); from Spain 72,486 quintals, and from India 115,273 quintals."—*New Orleans Commercial Bulletin.*



A Psalm of Life.

Tell me not, in mournful numbers,
"Life is but an empty dream!"
For the soul is dead that slumbers,
And things are not what they seem.

Life is real! Life is earnest!
And the grave is not its goal;
"Dust thou art, to dust returnest,"
Was not spoken of the soul.

Not enjoyment, and not sorrow,
Is our destined end or way;
But to act, that each to-morrow
Find us farther than to-day.

Art is long, and Time is fleeting,
And our hearts, though stout and brave,
Still, like muffled drums, are beating
Funeral marches to the grave.

In the world's broad field of battle,
In the bivouac of Life,
Be not like dumb, driven cattle!
Be a hero in the strife!

Trust no Future, howe'er pleasant!
Let the dead Past bury its dead!
Act,—act in the living Present!
Heart within, and GOD o'erhead!

Lives of great men all remind us
We can make our lives sublime,
And, departing, leave behind us
Footprints on the sands of time;

Footprints, that perhaps another,
Sailing o'er life's solemn main,
A forlorn and shipwrecked brother,
Seeing, shall take heart again.

Let us, then, be up and doing,
With a heart for any fate;
Still achieving, still pursuing,
Learn to labor and to wait.

LONGFELLOW.

Wishes.

All the fluttering wishes
Caged within thy heart
Beat their wings against it,
Longing to depart,
Till they shake their prison
With their wounded cry;
Open then thy heart to-day,
And let the captives fly.

Let them first fly upwards
Through the starry air,
Till you almost lose them,
For their home is there;
Then with outspread pinions,
Circling round and round,
Wing their way wherever
Want and woe are found.

Where the weary stitcher
Toils for daily bread;
Where the lonely watcher
Watches by her dead;
Where with thin weak fingers,
Toiling at the loom,
Stand the little children,
Blighted ere they bloom.

Where by darkness blinded,
Groping for the light,
With distorted countenance
Men do wrong for right;
Where in the cold shadow,
By smooth pleasure thrown,
Human hearts by hundreds
Harden into stone.

Where on dusty highways,
With faint heart and slow,
Cursing the glad sunlight,
Hungry outcasts go:
Where all mirth is silenced,
And the hearth is chill,
For one place is empty,
And one voice is still.

Some hearts will be lighter
While your captives roam
For their tender singing,
Then lead them home;
When the sunny hours
Into night depart,
Softly they will nestle
In a quiet heart.

Give.

See the rivers flowing
Downward to the sea,
Pouring all their treasures
Bountiful and free—
Yet to help their giving
Hidden springs arise;
Or, if need be, showers
Feed them from the skies!

Watch the princely flowers
Their rich fragrance spread,
Load the air with perfumes,
From their beauty shed—
Yet their lavish spending,
Leaves them not in dearth,
With fresh life replenished
By their mother earth!

Give thy heart's best treasures!
From fair Nature learn;
Give thy love,—and ask not,
Wait not a return;
And the more thou spendest
From the little store,
With a double bounty,
God will give thee more.